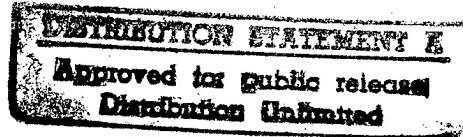


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JPRS-UEA-85-006

13 February 1985



# USSR Report

## ECONOMIC AFFAIRS

### EKO: ECONOMICS AND ORGANIZATION OF INDUSTRIAL PRODUCTION

No. 10, October 1984

19980318 137

PRINT QUALITY

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USSR REPORT  
ECONOMIC AFFAIRS

EKO: ECONOMICS AND ORGANIZATION  
OF INDUSTRIAL PRODUCTION

No. 10, October 1984

Except where indicated otherwise in the table of contents the following is a complete translation of the Russian-language monthly journal EKONOMIKA I ORGANIZATSIIA PROMYSHLENNOGO PROIZVODSTVA published in Novosibirsk.

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PUBLICATION DATA

English title : EKO: EKONOMICS AND ORGANIZATION OF  
INDUSTRIAL PRODUCTION No 10,  
October 1984

Russian title : EKO: EKONOMIKA I ORGANIZATSIIA  
PROMYSHLENNOGO PROIZVODSTVA

Author(s) :

Editor(s) : A. G. Aganbegyan

Publishing House : Izdatel'stvo "Nauka"

Place of Publication : Novosibirsk

Date of Publication : October 1984

Signed to press : 3 September 1984

Copies : 138,000

COPYRIGHT : Izdatel'stvo "Nauka", "Ekonomika  
i organizatsiya promyshlennogo  
proizvodstva", 1984.

## ATTRACTIVE QUALITIES OF MANAGER DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 3-19

[Article by Ye. I. Komarov, docent of the Moscow Institute of Management imeni S. Ordzhonikidze: "The Ability To Attract People"]

### [Text] Constant Communications With the Masses

V. I. Lenin was always communicating with the workers, peasants, Red Army servicemen and the intelligentsia. He frequently spoke at various conferences, meetings and gatherings, and he visited enterprises and institutions.

An eminent activist of the party and the Soviet state, A. A. Andreyev, noted in his memoirs that speaking before the people was for V. I. Lenin a "vital necessity. Through meeting with people in gatherings and in conversations he derived material for his generalizations."<sup>1</sup>

On the initiative of V. I. Lenin, in Moscow they introduced periodic speeches at enterprises and in institutions by members of the Central Committee and responsible workers. At first glance it would seem that refraining from speeches would save time. This kind of "economical practice" tears the leader away from the masses and deprives him of important bonds that connect him to the people. Periodic speeches are an important part of the work of the manager who is a communist and the manager who is an organizer. In K. U. Chernenko's speech at the June (1983) Plenum of the CPSU Central Committee he noted that "political speeches and regular business reports to the workers constitute the touchstone on which one can verify well the qualities of the manager and his ability to organize and lead people. This is the way Lenin stated the problem. This is the way it is being stated by our party's Central Committee".<sup>2</sup>

V. I. Lenin valued conversations with regular visitors and delegations of workers and peasants during his receiving hours. V. A. Karpinskiy emphasized that "in spite of his superhuman engagement in the most important state and party business, Vladimir Il'ich still found time to receive visitors. He received them personally and spoke with them not only because he considered

this the obligation of the head of state, but primarily because he experienced a persistent need for live communication with the people."<sup>3</sup>

People flocked to Lenin, looked for support, assistance and advice from him, and looked for answers to problems that interested them. Delegates selected at peasants' meetings drove and came on foot. Lenin had a special day for receiving peasants' delegates. Communicating with them enabled Lenin, in the words of the Siberian peasant O. I. Chernov, to hear all of the peasantry, to take into account "the entire complexity of the situation at the lowered levels." On the basis of concrete facts, V. I. Lenin made important generalizations and conclusions.

When communicating with the people, V. I. Lenin literally "threw" questions at them. He was interested in everything on the basis of which he could gain an idea of the man, his work, the state of affairs, his mood, his attitude toward measures taken by Soviet authorities, and so forth.

It is known that, in addition to daily meetings with dozens of officials from the staffs of the Sovnarkom [Council of People's Commissars], the VTsIK [All-Russian Central Executive Committee], the people's committees, and so forth, V. I. Lenin received each day no fewer than 2-3 visitors on their initiative. Sometimes the number reached 8-10. V. I. Lenin was very good at receiving visitors. He thought that this art should be a distinguishing feature of each manager and each institution.

V. I. Lenin thought that the Soviet institutions should work so that the population would experience no difficulties in presenting their requests and questions, so that each person would feel that he was receiving the attention due a human being. Only in this case would people feel that the institution was created for them.

V. I. Lenin always studied attentively the letters from the workers. On his instructions, the Sovnarkom created a receiving office. The secretary of the receiving office was obligated to handle the mail that came into the Sovnarkom or its chairman. Once every 2 weeks they reported to V. I. Lenin the overall content of the letters. V. I. Lenin, in the words of V. A. Karpinskiy, the former editor of the newspaper BEDNOTA, valued highly the peasants' letters to this newspaper and called them "authentic human documents."

In the winter of 1920-1921 in the editorial offices of the newspaper BEDNOTA, on the basis of peasants' letters concerning the food allotments and the difficult situation of the peasantry, a report was drawn up for V. I. Lenin personally. V. I. Lenin demanded from the newspaper BEDNOTA regular reports that were based on peasants' letters. In a note to V. A. Karpinskiy of 26 January 1922, V. I. Lenin requested that in a 2-3-page report they notify him of "how many letters had come in from peasants to BEDNOTA? What was important (especially important) and new in these letters? The moods? The problems of the day?"<sup>4</sup> "When hearing Lenin's report at the 10th Party Congress concerning replacing the food allotment with a food tax," wrote V. A. Karpinskiy, "in a number of places I felt that Vladimir Il'ich was using the peasants' letters as material."<sup>5</sup>

This pattern was typical of the workstyle of V. I. Lenin: those requirements which he placed on the personality and activity of the manager are the ones which he first displayed in himself. This pertains particularly to communications between the manager and the masses.

V. I. Lenin left as a legacy the brief and precise words of the following principles of management:

"Communications with the masses.

Live in the thick of things.

Know people's moods.

Know everything.

Understand the masses.

Be able to approach them.

Fight for their absolute trust.

Leaders must not become separated from the masses they lead, or the avant garde from the entire army of labor."<sup>6</sup>

V. I. Lenin thought that the manager should "live in the thick of working life, know everything from beginning to end, be able to determine the mood of the masses regarding any question at any time as well as their actual needs, desires and thoughts, be able to determine without a shadow of false idealization the degree of awareness and the strength of the influence of one or another prejudice or remnant from the past, and be able to win for himself the boundless confidence of the masses through a comradely attitude toward them and concerned satisfaction of their needs."<sup>7</sup>

#### Attention to Man

The ability to attract people as a feature of V. I. Lenin's workstyle was also manifested in his attention to man. Regardless of whom V. I. Lenin was dealing with--the secretary, the cleaning lady, a peasant, a worker, a physician, a scholar or the people's commissar--he always had respect for the individual and his work, and displayed concern, attention, tact, sensitivity, responsiveness and the desire to help and to give support during a difficult and hungry time. L. A. Fotiyeva noted in her memoirs: "I was struck by the way Lenin could, while carrying out an immense amount of party and state work, always recall every individual, his needs, his illness or the problem about which he had learned...it would hardly be possible to find another person who could be so warmly and tenderly concerned about every worker, regardless of which post he held--high or the most modest. Lenin's concern was always delicate and tactful."<sup>8</sup>

We know about numerous notes and letters from V. I. Lenin addressed to managers and workers of the secretariat of the SNK, in which he requests assistance for one person or another; or takes account of determines punishment for a bureaucratic attitude toward people, red tape, a lack of personal involvement, and indifference. S. B. Brichkina notes that V. I. Lenin was very attentive to the complaints of the workers, who "came to him from everywhere, from all segments of the population. Vladimir Il'ich ordered

to be notified immediately of all complaints that came into the administration of affairs of the Sovnarkom. Written complaints were reported within 24 hours, and verbal ones--within 48 hours.<sup>9</sup> Vladimir Il'ich drew attention to the need to be attentive to the complaints of workers and to the inadmissibility of red tape and bureaucratism.

Once, in the words of S. B. Brichkina, the following instance occurred. Two peasants went to Lenin with complaints about an illegal requisition of horses from them. The complaints were directed to a special commission which handled such problems. Having received the complaints, the workers of the commission wrote on the envelope: "There is too much work and there is no time to deal with such trivia." V. I. Lenin found about this bureaucratic stock answer. He issued an order to hold the worker criminally liable.

V. I. Lenin's attentive, concerned attitude toward people shows that it is possible to solve problems quickly if all administrative agencies and all managers are attentive to each individual and each request. A large number of unsolved problems "from below" have been brought about not by the lack of "objective possibilities," but by an inattentive attitude toward people and a lack of desire to take responsibility and make decisions on the spot.

V. I. Lenin's contemporaries noted his unusual ability to listen to people. "Vladimir Il'ich," recalled V. D. Bonch-Bruyevich, "was able to listen better than anybody.... This ability was reflected first and foremost in the concentrated attention with which Vladimir Il'ich listened to you, and his deep understanding of the issue, which was demonstrated in his response."<sup>10</sup>

In the words of A. V. Lunacharskiy, when he was listening V. I. Lenin literally absorbed the words of the speaker. He reacted in a lively way, urged the speaker on, asked questions and made remarks, directing the conversation to the major points. The ability to listen had an irresistible effect on people: they revealed their souls and their attitude to work to V. I. Lenin, and they looked at problems more deeply, more critically and in a businesslike manner. Probably each of us has noted in ourselves this unique transformation before a manager who is able to listen and carry on a conversation.

The ability to listen enabled V. I. Lenin to study people, their thoughts and their hopes, and to achieve "movement of the situation" and a "dialectic of events." There are many examples in which one phrase or another, a correct or erroneous judgment of someone with whom he was speaking was used by V. I. Lenin in his articles or speeches.

V. I. Lenin had the ability to hear in what was said the voice of the class, the development of a social phenomenon, a convincing argument, or an opinion which confirmed his own point of view on a question or forced him to look into the matter more deeply. V. I. Lenin's ability to deal with the opinion of other people was reflected in the collective development and adoption of decisions. "He never considered his own opinion to be unquestionable," noted A. A. Andreyev, "and he always listened attentively to the conclusions of others."<sup>11</sup> V. I. Lenin, as the chairman of the SNK and STO [Council of Labor

and Defense] important decisions after clarifying the viewpoints of his advisers and the responsible workers of the administrative staff.

#### Communication With People

V. I. Lenin enjoyed an immense amount of authority and was a leader of the masses but, when communicating with him, people did not feel the pressure of the personality of a leader. In the expression of M. I. Kalinin, Lenin was recognized to be 10 heads above other people, but they spoke with him as with an equal. He never in any way emphasized his high authority and position, and always remained himself--modest, simple and ordinary. This is what made him unusual, and this was his natural grace. A. M. Gor'kiy thought that this enabled him to retain his vital interest in simple people and won over for him the hearts and sympathies of the working people.

Usually the "great leaders of this world" are perceived as individuals who stand high above the people, who are not very accessible and are surrounded by a dense circle of people who are close to him. This notion, because of inertia, was sometimes transferred to V. I. Lenin as well. But, from evidence of his contemporaries, it did not correspond to Lenin's personality or activity. He was a new type of leader who lived and worked for the workers, linking his fate to the fate of the socialist society.

In communicating with people V. I. Lenin was gracious and simple, without mannerisms in his speech, poses in his movements or theatricality in his gestures and descriptions. He never tried to show his intellectual superiority. He was a leader who conducted himself in a natural and simple way, and always addressed people with the polite form of "you." "With any person," wrote P. D. Mal'kov, the commander of the Smolnyy and then the Kremlin, "whether it be the people's commissar or a rank-and-file worker, a scientist, a writer or a peasant, Lenin was always very attentive and spoke evenly, without a shade of superiority."<sup>12</sup>

A. A. Andreyev noted that V. I. Lenin was demanding and sharp at times, but in his dealings with people nobody ever saw a lack of respect or anything insulting. V. I. Lenin never turned to shouting, blowing up or such a gesture, in N. K. Krupskaya's expression, as "beating his fist on the table."

V. I. Lenin was able to be very strict with managers for irresponsibility, inefficiency, a lack of discipline or red tape. To do this he used the language of a business order, a severe tone and, if necessary, the most severe measures. For example, in a letter to N. P. Gorbunov of 3 December 1921 V. I. Lenin instructed him to investigate a case of idle time of the Swedish plant "Nitves i Gol'm." He was bothered by the terrible slowness of the workers of the Main Committee for State Structures and Elektrostroy: "...You were slow in filling out the order for hydroturbines!! We have a terrible shortage of them! This is the height of disgrace and shamefulness! You absolutely must find the guilty parties so that we can make these scoundrels rot in prisons."<sup>13</sup>

In his communication with people V. I. Lenin's persuasive abilities were clearly manifested. He never abused the power of his immense authority. He

always wanted to convince the person with whom he was speaking. V. I. Lenin had the gift of rapidly grasping the essence of a situation or a matter, determining the motive forces and the motives for action and finding precise and clear arguments in favor of the necessary decisions or, conversely, against incorrect steps or erroneous views.

"In spite of his colossal authority," wrote G. G. Chicherin, "in the majority of cases he used persuasion.... He never operated with naked authority, but only with arguments and persuasion, and he never took advantage of his unparalleled influence in order to overcome the resistance of people who had different opinions, but always argued and persuaded and would not rest until he had convinced others."<sup>14</sup> A person who has convinced one with the force of argument and facts is always stronger than the person who has "convinced" with the help of the power of authority or the imposition of a particular opinion. This kind of "conviction" is lost on the way out of the manager's office.

#### Lenin Holds a Meeting

The style of V. I. Lenin's business communication with workers during meetings of the Sovnarkom is of special interest. The basis of this style was discipline: prompt arrival at meetings, and the observance of work regulations, silence and order.

In spite of the strained situation of those years, the great occupation of the managers and the multitude of immediate tasks, V. I. Lenin never made any allowances for anyone, and always demanded observance of discipline. At V. I. Lenin's suggestion, on 26 April 1920 the VTsIK and the Sovnarkom adopted the decree, "On Measures To Prevent Lax Attendance of Meetings and Conferences," in which, in particular, the following measures were defined: for the first time being more than 10 minutes late without a good reason--a reprimand to be entered into the minutes of the meeting, for the second time--subtraction of a day's earnings, as for an absence, and for the third case of tardiness--a reprimand in the press.

With the large number of issues being considered and resolved at meetings of the Sovnarkom, it was especially important to observe the regulations for work which were proposed by V. I. Lenin in April 1919. According to these regulations, the time was distributed as follows: speakers giving reports--10 minutes, discussions, for the first time--5 minutes, and the second time--3 minutes.<sup>15</sup> According to G. M. Leplevskiy, a former member of the small Sovnarkom, and then its chairman, reports on major issues of more than 10 minutes were an exception. To speak briefly and concretely, observing the established regulations, was one of the main rules of business communication during the process of meetings of the Sovnarkom. A. V. Lunacharskiy noted accurately that at these meetings "there prevailed some kind of concentrated mood"--each minute held many facts and decisions. V. I. Lenin was most annoyed with those speakers who wanted to deal in general phrases. He quickly pinned them "to the wall" and demanded facts, figures and documents.

In the words of his contemporaries, V. I. Lenin, when conducting a meeting or conference, loved "heated exchange of opinions," debates among involved people, efficient proposals and successful arguments. He saw in this an

involved attitude toward the matter. One thing he would not tolerate was conversations during meetings. As L. A. Fotiyeva noted, conversations bothered him, distracted him, fatigued him and irritated him. V. I. Lenin, when conducting meetings, "angrily stopped people from talking" and warned them: "I shall mercilessly remove from the hall any violators of the order...." At meetings and in conferences V. I. Lenin himself constantly utilized and instructed others in the hall to use the "noiseless method of communication"--notes. "Write notes and do not babble..." he recommended. The floor was turned over to the participants in the meetings by turns, in the order of the entries which V. I. Lenin had made on sheets from special notepads. When he himself wanted to speak, he wrote himself a general note. Personally, he observed unwaveringly the regulations with respect to others and himself.

An important rule of business communications for Lenin was to check on the implementation of the decisions that had been made. Meetings of the Sovnarkom sometimes began with this. A. A. Andreyev noted that "it became hot" when V. I. Lenin blew up over a bad report, imprecise data, red tape, slovenliness and sloppiness in work. It was unpleasant to hear, A. V. Lunacharskiy noted intelligently, such words as "Soviet dignitaries who have lost their mind and reason," "scatterbrains," "bungling" and other "unpleasant definitions." If it was discovered that one of the members of the Sovnarkom had not carried out a government decree, V. I. Lenin right at the meeting gave instructions to have him arrested for 3 or 4 days and added: "Arrest him for the holidays and release him on the weekdays so that the work will not suffer."<sup>16</sup> Anyone who was truly involved in his work and placed the interests of the cause above his own interest was not offended and tried to rectify the situation and take mistakes into account. The person who was offended was the one who did not want to or could not work hard.

#### Simplicity and Modesty

The ability to attract people is manifested in a manager not only and not so much in the process of communication with people as in his actions and his style of life. The real manager has no "double bookkeeping": certain qualities for people and others for himself personally. People had an unusually high esteem for the integrity of Vladimir Il'ich's nature. V. I. Lenin was simple and modest not only in communicating with people. Simplicity and modesty were inherent in his home situation, his office, his clothing and his behavior.

Klara Tsetkin noted that "...his private apartment was distinguished by extreme simplicity and unpretentiousness. I frequently had occasion to visit the apartments of workers which were more richly furnished than the apartment of the 'all-powerful Moscow dictator.'"<sup>17</sup> In his home situation there was no "game of simplicity," "publicity of the deliberate simplicity of household conditions of the great leader." As L. A. Fotiyeva noted, in it there was "only that which was necessary for the life of the working family, which would provide the necessary conditions for hard creative work."<sup>18</sup>

People who visited V. I. Lenin's office in the Kremlin always noted the simplicity and modesty of his surroundings. There was nothing superfluous or

fancy in the furniture or in the selection of books. Everything was selected and arranged in such a way as to provide for organized and concentrated work. Everything in Vladimir Il'ich's office reflected his organization, efficiency, simplicity and modesty.

V. I. Lenin usually wore a simple three-piece suit of a dark brown color and a tie. G. M. Krzhizhanovskiy noted that the Jacobin Robespierre was concerned about how his suit looked in the eyes of masses as if it were something inherent only to him, Robespierre. This was not true of Vladimir Il'ich. His suit, although it was worn, was always neatly pressed and clean. Ya. M. Sverdlov, F. E. Dzerzhinskiy and P. D. Mal'kov once had occasion "to organize a conspiracy" with the tailor in order to make Vladimir Il'ich have a new suit tailored. Vladimir Il'ich never tolerated sloppiness, untidiness or slovenliness.

V. I. Lenin could not stand to pose or be photographed. This explains the relatively small number of photographs of V. I. Lenin. In a number of cases he agreed to have a sculptor work in his office. But even then he did not agree to pose, but set a working condition: "Everyone will do his own work."

V. I. Lenin insisted on forbidding the newspaper and magazines to publish articles in which he was proclaimed to be a historical personality or which glorified his activity. He avoided participating in banquets and parties that went along with meetings at party congresses and conferences, although they were not so frequent at that time.

An instructive occurrence took place at the 9th Party Congress. At the request of the delegates the final meeting of the congress on 5 April 1920 was devoted to V. I. Lenin's 50th birthday. When the speeches began Lenin was not in the hall; he was working in his office. When he learned about the honor V. I. Lenin sent a note to the presidium with a request that they immediately put a stop to it. The note brought no active response. Only after the third note from Lenin and after he had telephoned the person in charge, G. I. Petrovskiy, with a request that they stop the flow of praise and continue to discuss the regular issues of the conference were the birthday speeches stopped. The congress adopted a decree: in celebration of V. I. Lenin's 50th birthday, to publish a complete collection of his essays in a mass edition.

V. I. Lenin never tried to provide himself, his family or his relatives with special living conditions, food or therapy. During the difficult and hungry years of that time the peasants frequently sent food to Il'ich. He always arranged to have it sent to a school, a kindergarten or to the workers.

V. I. Lenin did not eat especially well. The meals he received in the Kremlin dining room were modest--liquid soup and wheat mush (one time corned beef). It was frequently cold in V. I. Lenin's apartment--there was not enough wood. In spite of this V. I. Lenin never complained to the commander of the Kremlin.

#### Humor and Joie de Vivre

Humor, jokes and a joy in living combined with a sharp mind, culture and humanity enabled V. I. Lenin to quickly win the hearts of the people.

"Characterizing his manner of working," writes L. A. Patiyeva, "one can say that he worked joyfully. He had an exceptional sense of humor. During his receiving hours one frequently heard laughter in Vladimir Il'ich's office; he also laughed frequently at meetings of the Sovnarkom. His laughter was unusually infectious and was never offensive. It was the laugh of a person who had great energy and an abundance of vital forces."<sup>19</sup>

V. I. Lenin was able to speak about serious things with a smile. "I had occasion to observe this kind of joy in living," noted one of the founders of the Communist Party of Austria, K. Shteinhardt, "only in Friedrich Engels."<sup>20</sup>

Vladimir Il'ich valued wit and man's ability to relieve tension, "to wake up an audience" or "to alarm a speaker" with an unusual word or turn of phrase (he noted this ability in M. I. Kalinin). In the words of G. M. Krzhizhanovskiy, when one was near V. I. Lenin one heard the most passionate speeches and the most joyful laughter.<sup>21</sup> According to A. M. Gor'kiy, V. I. Lenin's laughter was charming--"the laughter of a person who was quite able to see the awkwardness of human stupidity and the acrobatic tricks and turns of reason, who was able to enjoy the childish naivete of the 'simple at heart.' An old fisherman, Giovanni Sparado said about him: 'Only an honest person can laugh that way.'"<sup>22</sup>

As workers of the SNK staff emphasized, Vladimir Il'ich's energy and joy of life were passed on to others. It was good and joyful to work with him. This made his demandingness easier to accept. Only during the period when his illness became worse was there less humor and would Il'ich's laugh be heard less frequently.

Lenin's ability to attract people includes a whole number of everlasting moral norms and values which are important for any manager, regardless of the sphere of his activity or the position he holds. It was noted at the 26th CPSU Congress: "The style and methods of leadership are an important issue for the entire party and for all the people. To recall this daily and to be guided by Leninist norms in everything is the direct responsibility of any manager."<sup>23</sup>

#### FOOTNOTES

1. "Vospominaniya o Vladimire Il'iche Lenine" [Reminiscences of Vladimir Il'ich], Moscow, Politizdat, 1969, Vol 4, p 33.
2. "Materialy Plenuma Tsentral'nogo Komiteta KPSS, 14-15 iyunya 1983" [Materials of the Plenum of the CPSU Central Committee, 14-15 June 1983], Moscow, Politizdat, 1983, p 64.
3. "Vospominaniya o Vladimire Il'iche Lenine," Vol 4, p 284.
4. Lenin, V. I., "Poln. Sobr. Such." [Complete Collected Works], Vol 54, pp 143-144.
5. "Vospominaniya o Vladimire Il'iche Lenine," Vol 4, p 284.
6. Lenin, V. I., "Poln. Sobr. Soch.," Vol 44, p 497.

7. Ibid., p 348.
8. Fotiyeva, L. I., "V. I. Lenin--Rukovoditel' i Tovarishch" [V. I. Lenin--Leader and Comrade], Moscow, "Znaniye," 1973, p 59.
9. "Vospominaniya o Vladimire Il'iche Lenine," Vol 3, p 407.
10. Ibid., Vol 3, p 191.
11. Ibid., Vol 4, p 26.
12. Ibid., Vol 3, p 242.
13. V. I. Lenin, "Poln. Sobr. Soch.," Vol 53, p 163.
14. "Vospominaniya o Vladimire Il'iche Lenine," Vol 4, p 417.
15. See: Lenin, V. I., "Poln. Sobr. Soch.," Vol 50, p 274.
16. Fotiyeva, L. I., "V. I. Lenin--"Rukovoditel' i Tovarishch," p 43.
17. "Vospominaniya o Vladimire Il'iche Lenine," Vol 5, p 11.
18. Fotiyeva, L. I., "V. I. Lenin--"Rukovoditel' i Tovarishch," p 76.
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20. "Vospominaniya o Vladimire Il'iche Lenine," Vol 5, p 200.
21. Ibid., Vol 4, p 49.
22. Ibid., Vol 4, p 47.
23. "Materials of the 26th CPSU Congress," Moscow, Politizdat, 1981, p 99.

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## HISTORY OF BAM SUMMARIZED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 20-29

[Material prepared by A. A. Kin, candidate of economic sciences, academic secretary of the Scientific Council for Problems of the BAM of the USSR Academy of Sciences, and L. A. Semina, correspondent of USSR Gosteleradio [State Committee of the USSR Council of Ministers for Television and Radiobroadcasting], editor of the Mayak program for construction workers of the BAM: "A Brief Chronicle of the BAM"]

[Text] 1930. The Central Committee of the All-Russian Communist Party (of Bolsheviks) and the USSR Soviet of People's Commissars, through Far East Area organizations directed proposals concerning the planning and construction of the second main railroad line extending to the Pacific Ocean. In this document the future railroad was called for the first time the Baykal-Amur Mainline (BAM).

1932. The USSR People's Commissariat of Railways began to look for the future route.

1933. The general direction of the BAM route was determined from Tayshet to the Pacific Ocean. Its support points were earmarked as Tayshet--Padunskiye porogi on the Angar--northern end of Baykal--the settlement of Tyndinskiy--Urgal--Komsomolsk-on-Amur--Sovetskaya Gavan. The first meters of rail were laid at Bam going to the north in the direction of the village of Tyndinskiy.

1937. Trains begin to travel on the section Bam-Tyndinsky.

1940. Trains begin to travel on the section Izvestokavaya-Urgal.

1942. A decision was made to dismantle the upper construction of the track on the railroad section Bam-Tyndinskiy and Izvestokavaya-Urgal. The rails were sent for the construction for the Volga railroad (Saratov-Stalingrad).

1943. Search was started for the route of Komsomolsk-on-Amur--Sovetskaya Gavan. Within 2 years trains had already begun to operate on this section.

1950. Traffic was opened up on the section Tayshet--Lena (Ust-Kut).

1970. A general agreement was signed with Japan for the construction in the Soviet Union of a deep-water eastern seaport in Vrangel Bay--the "sea gates" of the BAM. The Japanese offered credit to the USSR.

1974. The first youth detachment imeni XVII Komsomol Congress is sent for construction work on the Mainline. On 3 May the first detachments of detachment workers arrived at the BAM. Construction was started simultaneously at many points along the Mainline: Lena, Nizhneangarsk, Tynda, the region of the bridge crossing over the Selemdzha River, Urgal, Berezovka and Komsomolsk-on-Amur.

1974, June. A general agreement was concluded for delivery of southern Yakutiya coal from the USSR to Japan. The participation of the Japanese side was expressed in granting bank credit for purchasing machines and equipment, including for the construction of the railroad BAM--Tyndinskaya--Berkakit. The credit would be repaid in 20 years with deliveries of southern Yakutiya coal.

1974, July. The CPSU Central Committee and the USSR Council of Ministers adopted the decree, "On Construction of the Baykal-Amur Railroad Mainline." The second route to the ocean was to meet the most modern technical and economic requirements. The government intended to complete the construction of the BAM within 10 years.

1974, August. The first subdivisions of railroad troops arrived at the Urgal station. They were to construct the eastern section of the BAM--from Tyndinskiy to Komsomolsk-on-Amur. In September the rails of the first kilometer of the Eastern section of the BAM were laid along the banks of the Amur.

1975, February. Patronage assistance was developed extensively in the construction of facilities for the Baykal-Amur Mainline. Collectives of many enterprises, scientific research institutes and planning organizations of the country resolved to help in the planning and construction of cities and villages along the BAM route. Through the efforts of patrons from various republics, it was intended to construct 45 villages, stations and cities.

1975, May. Traffic of trains along the Bam-Tynda line was started 5 months ahead of schedule. After it was put into operation the builders could extensively develop work in 3 directions at the same time: the West, the East and the North.

1975, September. The Presidium of the USSR Academy of Sciences organized the Scientific Council for Problems of the BAM, whose purpose is to coordinate all scientific research related to the construction of the Mainline and the assimilation of the territories adjacent to it. As early as September it held the 1st All-Union Scientific-Practical Conference on Problems of Economic Assimilation of the BAM Zone.

1975, November. A powerful explosion heralded the beginning of a new stage in the construction of the Tynda-Berkakit branch: they began the attack on the

Stanov range, through which a tunnel passes. The collective of tunnel diggers was formed from subway builders from Moscow and Leningrad and construction workers of the Ust'-Ilimskaya GES [State Electric Power Plant].

1975, December. The results were summed up. During 1975 on the route 28 residential settlements were erected, 178 kilometers of main railroads were laid, and more than 1,000 kilometers of trackside highways and 70 bridges were constructed. The tracks were opened up for train traffic ahead of schedule along the BAM--Tynda and Ust-Kut--Zvezdnyy lines and the bridges across the Amur and Lena rivers.

The Main Administration for Construction of the BAM moved to Tynda, and an operations group was left in Moscow.

The first landing party made its way to the northern Muysk mountain range from Nizhneangarsk for the winter. The first to come needed 2 months in order to reach the region of the construction of the northern Muysk tunnel which had a distance of 15.3 kilometers.

1976, February. The first bucket of coal was raised at the Neryungrinskiy coal mine. This began the development of the mining of coking coal in southern Yakutiya.

1976, May. Digging was started on the Western opening of the Baykal tunnels, with a distance of 6.7 kilometers. The settlements of Granitnyy, Davan and Goudzhekit were created for the tunnel diggers.

1976, August. The first high-speed non-water line was opened up on Lake Baykal. This route, which is served by hydrofoils, links the Trans-Siberian Railroad with the city of Severobaykalsk which is under construction on the BAM.

1976, December. In the port of Vostochnyy the first container terminal was put into operation, the first section of which is capable of dispatching 75,000 containers a year. In the future the capacities will be doubled, which will open up great opportunities for transcontinental container shipments. In the Vostochnyy port they are already conducting transshipment of thousands of containers of standard international cargo which are in transit on the railroad from Japan to countries of Southeast Asia through Siberia to Western Europe and back. The cost of shipping containers along the railroad is 30 percent less than shipment by sea. The movement and loading of containers is controlled by an automated control system, which sorts them ahead of time according to addresses and designation.

The coal dock of the Vostochnyy port was put into operation. The productivity of the first section is 5 million tons of coal a year, and in the future the capacity of the coal terminal will double.

1977, May. The Tynda-Berkakit railroad reached the Nagornyy tunnel. In order not to hold back the movement of the Mainline, a decision was made to construct a temporary railroad bypass of the tunnel.

In Tayshet they are constructing enterprises for repair of road construction equipment for the BAM. In Shimanovsk they are constructing a complex of enterprises of the construction industry. In Kurgan construction has been started on a plant for metal structures for bridges of the BAM. In Nizhneudinsk they are creating enterprises for construction materials, and in Ust-Kut construction is being completed on the second section of the wood-processing combine.

1977, September. The 1,240-meter Nagornyy tunnel has been connected up.

In Blagoveshchensk the 2nd All-Union Scientific and Practical Conference has begun its work on problems of economic assimilation of the Mainline zone. Here they considered the draft of a comprehensive target program for the development of the BAM zone.

1977, October. An airport has been introduced in Severomuysk. The aircraft complete regular flights between Nizhneangarsk and the settlements of construction workers of the northern Muysk tunnel.

The Bam-Tynda line has been put into permanent operation with an evaluation of "good."

A vertical piling was pounded through the Baykal mountain range to the center of the future Baykal tunnel. It will make it possible for the drillers to speed up underground work.

1977, December. Power from the Zeyskaya GES has come to the central section of the BAM. A power transmission line has been constructed with a distance of more than 400 kilometers. All population points located along the BAM-Tynda line have been hooked up to this reliable and inexpensive source of electric energy.

The blue screens of television sets lit up for the first time in the settlements of construction workers of the eastern section of the BAM. A powerful television relay station was put into operation in Verkhnebureinskiy Rayon.

1978, January. The first cubic meters of timber were shipped to consumers by the new Tyndinskiy timber industry enterprise. This is the second timber procurement enterprise that has gone into operation in the zone of the "small" BAM.

1978, October. The Tynda-Berkakit line was extended to Neryungra. The last length of rails was put into place at the Ugolnaya station. The first train with Neryungra coal traveled along the northern route.

In the Kuzbass at the Kuznetsk Combine imeni Lenin they began final testing of a complex for heat treatment of rails. When the complex goes into operation the metalworkers will annually produce 750,000 long rails for the BAM and other new construction projects. Their length of service will be increased 1.5-fold.

1978, December. According to the results of the year, about 20,000 workers and employees of the USSR Ministry of Geology were employed in research and prospecting for minerals in the BAM zone. They transferred 52 deposits of construction materials to the BAM construction workers.

1979, January. Current was sent through the LEP-220 power transmission line through the Ust-Ilim--Baykal tunnel with a distance of 563 kilometers.

1979, March. In Tynda there was an all-union scientific and practical conference entitled "Man on the BAM."

1979, May. Thousands of piles were driven into the right bank of the Tynda River: the foundation was laid for the largest locomotive depot in the country, which was to be the basis for the transportation center of the Baykal-Amur Railroad.

The 1st All-Russian Artistic Exhibit, "We Are Constructing the BAM" was opened in the capital of the Buryat ASSR. Almost 1,000 artists and sculptors displayed more than 2,000 works.

1979, July. Construction was completed on the eastern section of the Mainline almost a year and a half ahead of schedule. The Far Eastern railroad circle was closed, which joined the stations of Izvestkovaya, Urgal, Komsomolsk-on-Amur and Khabarovsk with the port Vanino. Joined by meridian lines to the Trans-Siberian Railroad, the new road makes it possible to considerably improve transportation communications with Sakhalin, Kamchatka and Magadan Oblast and to increase the maneuverability and cargo handling capacity of the entire railroad network of the Far East.

1979, September. The regular traveling session of the Scientific Council for Problems of the BAM of the Academy of Sciences was opened in Komsomolsk-on-Amur. The scientists stated that the Mainline was already significantly strengthening the economic ties between the western and eastern parts of the country. It would be exerting an ever increasing influence on the development of international economic ties in the Pacific Ocean basin. The traveling session considered problems of the juncture of aircraft, railroad, automotive and maritime cargo flows.

1979, November. The Neryungri-Bam-Vostochnyy port transportation conveyor began to operate. In Vrangel Bay the railroad delivered the first batch of coal extracted from the mines of southern Yakutia.

1980, February. Track-laying cranes which were modernized at the Kaluga machine building plant arrived for the construction of the BAM. The productivity of the equipment is 1 kilometer of rails with ties per hour.

1980, March. The concrete supports of the future railroad bridge rose to the height of a 20-story building over the icy cover of the water reservoir of the Zeyskaya GES.

At the 276th kilometer of the western section of the BAM there was an avalanche--the snow had continued to fall for 2 weeks in the foothills of the

Baykal range. The flow of snow and rocks cut the support of the LEP, broke the wire, and cut off the highway. A decision was made to construct an anti-avalanche dike.

1980, April. During the construction of the Baykal tunnel there was a joining of the transport-drainage adit. The two adits that were being built toward one another joined with the precision of jewelry.

1980, July. Construction was started on the most important facility of the BAM--the railroad bridge across the Vitim River.

1980, December. The Komsomolsk-on-Amur--Postyshevo section was accepted for permanent operation. The entire startup complex was constructed with good quality.

1981, January. The Baykal-Amur railroad was organized with an administration in the city of Tynda. As part of the BAM railroad they organized the northern Baykal, Urgal and Tynda divisions of the road with an overall operating distance of 1,600 kilometers of road. The first heavy trains carrying coal and timber passed along the route Urgal--Postyshevo--Komsomolsk-on-Amur. Permanent cargo traffic of trains was opened up along the eastern section of the BAM.

1981, September. In Ulan-Ude the 3rd All-Union Scientific and Practical Conference on Problems of Economic Assimilation of the BAM zone is in operation. Specialists have adopted recommendations regarding optimal distribution of enterprises, the building up of cities, the creation of a food base, and protection of the environment in the zone of the Mainline.

The installation of the support for the highway bridge across the Vitim River, one of the most difficult ones on the route, has been completed. Suffice it to say that the level of water in the river rises 17 meters during flooding times!

1982, February. On the eastern section of the Mainline the railroad troops have taken the Turana mountain range. The track layers moved in the direction of the Sevralsk station.

1982, August. Builders of the northern Muysk tunnel have completed the main part from the eastern portal to the vertical pillar, with a distance of 3.5 kilometers.

1982, September. Uralmashzavod [Ural Machinery Plant] sent a batch of excavators with 20-cubic-meter scoops to the Neryungri coal mine.

The testing of the new VL-84 locomotive, which is intended for the Baykal-Amur mainline, was conducted by specialists of the Novocherkassk electric locomotive construction plant. The electric locomotive easily holds a train weighing 1,000 tons more than is being pulled by locomotives that are being produced presently.

Unique purification installations were put into operation in the Urgal-2 settlement. The wastes are decontaminated in them with the help of compressed oxygen in special equipment. The Baykal tunnel was released for laying the rails.

1983. By 1 January more than 400 million cubic meters of earth-moving work had been completed for the construction of the BAM; 3,400 trackside highways, 1,440 bridges and 1,800 culverts had been constructed; and 2,260 kilometers of main railroad tracks had been laid. The plant for large-panel housing construction in Neryungri reached its planned capacity. Its annual output is 85,000 square meters of parts and building structures.

1983, March. The laying of the rails to bypass the northern Muysk tunnel was completed. The first train approached the Okusikan station not far from Severomuysk.

1983, April. Testing was completed on the ChS-8 electric locomotive which is intended for the BAM. It was constructed at plants of the Czechoslovakian Shkoda Association. The electric locomotive has the most modern equipment.

1983, October. Electrification of the BAM was started. The first supports for the contact network were established before the Baykal tunnel.

The first BelAZ [Belorussian Automobile Plant] dump truck in the country with a capacity of 180 tons started working in the Neryungri coal mine.

1983, December. In keeping with the plan for the assimilation of the natural wealth of the Western section of the BAM zone, construction was started on timber docks in Ust-Kut, on the left bank of the Lena River.

The railroad warriors began to attack the last 100-kilometer section in the eastern part of the BAM.

The Komsomolsk-on-Amur--Urgal LEP-220 went into operation on the eastern section.

The first aggregate of the Neryungrinskaya GRES [state regional electric power plant] went into operation. With the startup of the energy block which has a capacity of 210 megawatts stable energy supply is provided for facilities of the southern Yakutiya TPK.

1984, January. The ground has been broken on the last tunnel on the cape, the longest. Digging has been completed on the 5,400 meters through the cliffs above Baykal and work is being done to lay concrete and put the finishing touches on the structures.

First Passenger Train No 13, which was formed in Tynda, arrived in Moscow at the Yaroslav station precisely on schedule. We have now arranged reliable automatic telephone communications between Moscow and Tynda.

1984, April. The railroad warriors finished laying the major railroad in the eastern section of the Mainline. The CPSU Central Committee congratulated all

participants in the construction of the eastern section of the BAM on their early completion of the laying of the major tracks and the opening of through traffic of trains from Tynda to Komsomolsk-on-Amur.

1984, July. The Politburo of the CPSU Central Committee heard the announcement of Comrade G. A. Aliyev regarding certain issues related to the construction of the BAM. It was noted that on the whole the construction of the Mainline is proceeding at rapid rates. He emphasized the need to accelerate the rates of the assimilation of the natural resources in the BAM zone, the development of new industries here, the development of the network and improvement of the condition of the highways, and the creation of auxiliary services which provide for a normal operation of the Mainline.

1984, August. There were about 50 kilometers left until the main railroad of the BAM was joined together. The workers are working according to the schedule. More than 30,000 people and 2,500 large trucks are working on the final section of the Mainline. At the Kuanda station in the region where the BAM comes together an obelisk is being constructed--a symbol of the labor glory of the builders of the Mainline.

In October, when this issue of the magazine reaches the hands of the reader, the laying of the Mainline will be completed, the brigades that have been working toward one another will meet and this will be announced in a festive celebration: after many years of preliminary research and after 10 years of hard work the country has received one more latitudinal mainline in the east of the country. Its startup will provide more reliable ties between the Far East and the Center and will accelerate the development of the productive forces of Eastern Siberia and the entire immense Eastern region.

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## COMPREHENSIVE APPROACH AT COMBINE PLANT

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 30-31

[Introduction to articles that follow: "The Dnepropetrovsk Combine Plant--The Effect of the Comprehensive Approach"]

[Text] The Order of the Labor Red Banner Dnepropetrovsk Combine Plant imeni K. Ye. Voroshilov is an enterprise with a complicated biography. For many years it was "feverish" and by the 1960s the plant was permanently in a bad situation. By 1967 it had failed to deliver to the state 1,500 combines....

They managed to turn things around at the end of the 1960s, and this was largely the result of the arrival of a new director, A. A. Pokusa. Now this is a leading enterprise which for 50 quarters in a row (or more than 12 years) has been first in the branch in terms of the results of its work. For the last 7 years the collective has regularly been awarded the Challenge Red Banner of the CPSU Central Committee, the USSR Council of Ministers, the VTsSPS [All-Russian Central Workers' Cooperative] and the Komsomol Central Committee.

During the years of the 10th Five-Year Plan the plant fully updated its products. Beginning in 1975 it changed over to the output of the RKS-6 self-propelled six-row root harvesting machine. Its high technical level and the originality of its design were noted by the USSR State Committee for Science and Technology, which in its decree recognized the RKS-6 machine as the best machine of 1979. For the creation of the design and the organization of production of the machine, the collective of inventors was awarded the USSR State Prize. In 1978 they began to produce the RKS-4 for the irrigated sugar beet zone, and in 1979 they began to produce the SPS-4.2 self-propelled sugar beet loaders. At the international agricultural exhibit entitled "Land-Benefactor-80" (Czechoslovakia) the loader was awarded the main prize of the exhibit, the "Golden Spike," and a medal of the first degree. In 1982 at an exhibit and trade fair in the GDR it was awarded a gold medal.

The plant also produces mechanized lines for calibrating and putting away seed sugar beets for winter storage as well as other machines. There have been no complaints about its machines for 14 years now.

What has brought these successes about? It seems that the "keys" to success are:

constant purposive improvement of labor organization and the achievement of high-quality labor in each work station;

a great deal of attention to the object of production--the machines and mechanisms that are produced, and effective organization of design work;

close ties with the consumers of the products and orientation toward their demand.

We asked the managers of the plant to discuss this.

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## SUCCESS ATTRIBUTED TO ORDER IN ENTERPRISE

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 32-44

[Article by A. A. Pokusa, director of the Dnepropetrovsk Combine Plant imeni K. Ye. Voroshilov, Hero of Socialist Labor: "From Order in the Work Station--to Order at the Enterprise"]

### [Text] Not Having Interruptions

For about the past 15 years our plant has regularly achieved high growth rates in all areas of our work. I shall give several of the main indicators for recent years. During the years of the 10th Five-Year Plan and the 3 years of the 11th Five-Year Plan the production volume has increased by 105 percent, and labor productivity--by 91.1 percent. And the average annual growth in the volume of commercial output amounted to 13.1 percent, and labor productivity--11.4 percent. During 3 years of the 11th Five-Year Plan labor productivity increased by 27.6 percent. This accounted for the entire increase in the volume of production. The growth of the average wages per 1 point of increase in labor productivity during the 3 years amounted to 0.16 percent. There was a 7.3-percent increase in output-capital ratio during the 3 years of the 11th-Five-Year Plan. In 1982 it amounted to 2 rubles, 82 kopeks per 1 ruble of value of fixed industrial production capital.

Labor turnover is 9 percent. Losses of working time have decreased during this period by 55.2 percent (0.25 man-days per year per worker).

The proportion of products of highest quality category in the overall commercial output amounted to 60.9 percent in 1982 and 82.5 percent (with a plan for 79.2 percent) in 1983. Throughout the ministry in 1983 this indicator was equal to 34.2 percent.

It was not an easy task to provide for such rates. The underlying basis, the link from which it is possible, as V. I. Lenin said, to pull the entire chain is, in our opinion, introducing order at the work station. It is precisely at the work station that the interests of the plant, the worker and the consumer come together. The quality of the products depends on the state of affairs here. In the final analysis it is at the work station that the fate of the

plan is decided. And whether the enterprise will operate successfully or whether it will be doomed to failure is decided by the conditions that are created there, the equipment, the norms and the labor organization there.

### Introducing General Order!

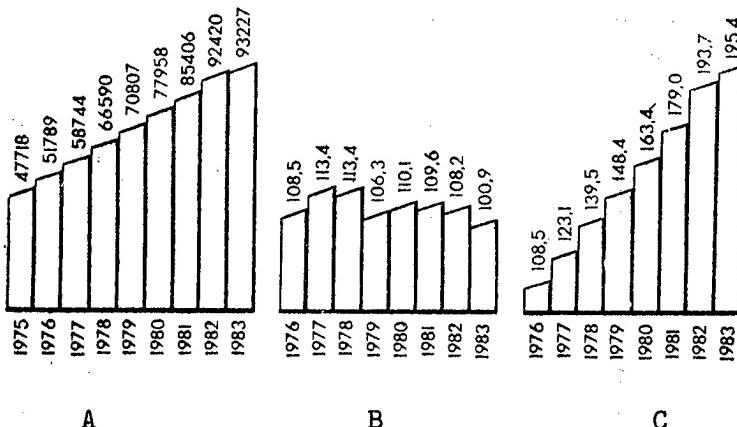
We began to work in this area long ago, as early as the 1960s. Our first concrete job was to struggle for the art of production at the work station. In my opinion both labor productivity and the quality of the products that are produced depend largely on this and, moreover (and this is of no small importance!)--the culture of the working person himself, the microclimate in the shop and the relations among the people. Finally, technical safety requires this.

One must say that disorder in the shops was rampant: thousands of parts were lying around on the floor and on the tables, and a good deal of time was spent in trying to find what one needed. Every part had to be moved and transferred several times in order to take it from one work station to another. It was necessary to load the parts on a hand cart and transport them--time was lost and people were kept busy.... Therefore we decided that our first task would be to provide the plant with industrial packaging. In the shops now we have 10,000 units of packaging in circulation. While previously the workers of the assembly shop went through small wooden boxes looking for the bolts and parts they needed, now a mobile table moves along the conveyor, and it has boxes which contain everything necessary for work. Injuries have disappeared, labor turnover has decreased, and the work has acquired more content.

But this was only the first step. Years passed and the task set by the state for our plant's collective became more complicated. The plan increased sharply. Thus during the past 7-8 years we have doubled the output of products, while working with approximately the same area as we had dozens of years ago. We have managed only with the internal construction method, the method of construction by the people, to construct two buildings for producing the RKS-6 machine and the automatic loader. The entire collective, beginning with the director, worked on the construction. The following example tells of the situation with respect to the production sites: according to the normative, there was to be an average of 24 square meters per worker, while we had only 11. How could we fulfill the constantly increasing plans? We saw only one solution--to increase labor productivity as a result of searching out internal reserves and to accelerate scientific and technical progress.

This work has been conducted most intensively and purposively since the end of 1979. We have devoted and are devoting special attention to disclosing reserves for increasing labor productivity and releasing industrial production personnel. One of the main measures conducted at the plant in this area is the development and introduction of a complex of engineering measures for releasing work stations by introducing progressive equipment, better technological processes, and new fittings, mechanization and automation of assembly, welding, and loading and unloading work, and so forth. Certification of the work stations has become a method of achieving these goals.

Indicators of Operation of Dnepropetrovsk Combine Plant  
imeni K. Ye. Voroshilov



a--Volume of gross output in 1975 prices, thousands of rubles; b--rate of growth over preceding year, %; rate of growth over 1975, %.

Many people ask us if moral or material incentives have been in effect here. I wish to say immediately: no. The plant manager and its collective embarked on this because they were aware of the importance of the task facing us--rapid and maximum possible satisfaction of the needs of agriculture for machines of a high technical level.

#### What Do We Mean by Certification of Work Stations?

Certification means introducing order and checking to make sure that certain criteria are met. We have an entire system in operation at the plant.

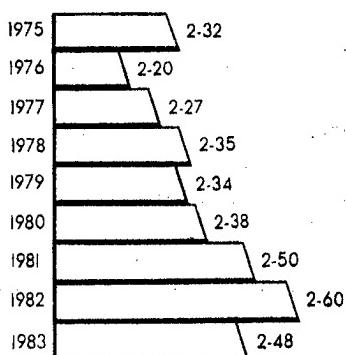
Today we certify engineering and technical personnel, brigades, work stations and products. Tomorrow we will be certifying propagandists and lecturers in political and economic training, and agitators. Such is the complex of work. Certification of the work stations is one of its sections.

Each ministry, in keeping with the standard provisions, gives the enterprises assignments for bringing a certain number of work stations (8-10 percent per year) up to a particular standard. This means that it would take 10-12 years to bring all the work stations up to the given level. But during such a period of time both the equipment and the requirements for the work station as well as the criteria for evaluating them will change. Nobody has paid any attention to many work stations for dozens of years, but they still exist and people work at them and receive wages.

We have decided to accelerate the process of certification, having analyzed the condition at the work stations from the standpoint of those criteria which you yourselves have developed. These include first and foremost the development of a particular work station, the composition of equipment and the

degree to which it corresponds to the assignments which are set, and the prospects for changing over to cost accounting (khozraschet).

+ Increase of Output-Capital Ratio of Fixed Industrial Production-Capital, Rubles/Rubles



#### Preparation for Certification

Before beginning to certify the work stations, they were inventoried (the quantity and availability were determined). One should not be surprised at the simplicity of this work. Up to this day there are managers who do not know how many work stations they have. Although, of course, they know how many workers are at the enterprise. This is a planning indicator and the calculation of labor productivity is related to it.

And so, in order to achieve maximum effectiveness when conducting the work for searching out reserve for increasing labor productivity and releasing work stations, the laboratory for scientific organization of labor and the division for labor and wages inventoried the work stations. This inventory showed that in the plant's main production there were 1,614 work stations and in auxiliary production--1,418. It should be noted that the inventory of the work stations made it possible to solve only organizational problems and problems of providing the work stations with organizational supplies, without an in-depth analysis of the degree to which they correspond to progressive decisions. The next stage was the certification.

#### The Mechanism of Certification

We try to organize the work in such a way as to provide for a skillfull approach to every work station without exception. To this end we developed and submitted to the subdivision the standards of the enterprise, "Provisions Concerning Certification of Work Stations for Their Correspondence to Progressive Decisions" and "The Policy for Organizing Work To Release Work Stations."

By a plant order a certification commission was created with the plant's head engineer in charge, the time periods for conducting the certification of the

work stations were earmarked, and work groups were formed in the shops for conducting this work in conjunction with the services of the head specialists of the plant, who became the responsible parties. In the shops all the work was supervised by the shop chiefs. The commissions included the shop technologist, the technologist in charge of the head technologist's division, the chief of the BTZ [Vladimir Tractor Plant im. A. A. Zhdanov], the chief of the production and distribution bureau, the leading workers, brigade leaders and foremen.

There were 120 engineering and technical personnel from the auxiliary services assigned to help the main workers during the certification period. The laboratory for scientific organization of labor developed and approved a special form on which it was possible to certify 10 work stations at the same time. This form made it possible to group the work stations according to any indicator (level of labor organization, kind of work and alteration, the territorial indicator) and to facilitate the work for drawing up the necessary organizational and technical measures for a complex of work stations at the same time.

The certification was organized in such a way that the work stations were distributed among the main specialists according to the technological and technical areas in which they belonged (divisions). All this made it possible to make the work complex and comprehensive, and it also provided for a skilled approach to certification and established the real state of affairs regarding questions of supply and service, planning and conditions for labor, division and cooperation, and also norm-setting for labor at the work stations.

Work for certifying the work stations is conducted annually. Many measures are earmarked for more than 1 year (for example, replacement of equipment). We can make our requirements more rigid and depart from the related provisions that are generally accepted at the enterprise (thus so far we have certified work stations regardless of the shortage of space). We also have the opportunity to change the criteria for certification themselves as well as their direction. For example, when solving the problem of raising the general technical level of production, we also raise the proportion of evaluations in this group.

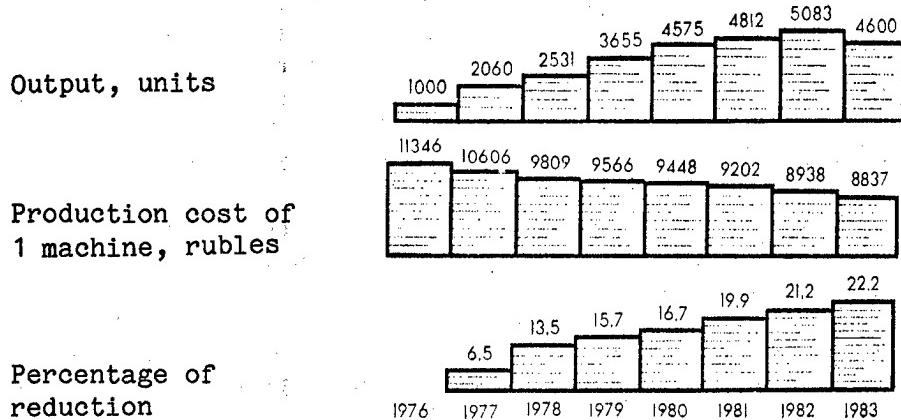
We now have 16 criteria which we use to certify work stations. They can be divided into four groups: supply and service for work stations; planning and conditions for labor; division and cooperation of labor; and norm-setting for labor. Each of these, in turn, include four more indicators: (1) supply and auxiliary equipment, technical and organizational fittings and instruments, kinds of service, and provision with objects and means of labor; (2) the overall planning, sanitary and hygienic conditions, aesthetic requirements, conditions for labor and recreation; (3) the singling out of auxiliary operations, servicing of more than one machine tool, combining occupations and applying brigade forms of labor; (4) normatives that are applied for labor, proportion of technically substantiated output norms, assimilation of calculated norms, and average percentage of fulfillment of norms.

Each indicator is assigned a value of 0 or 0.25. By adding them up we receive the overall coefficient. If it is equal to 1, the work station is certified

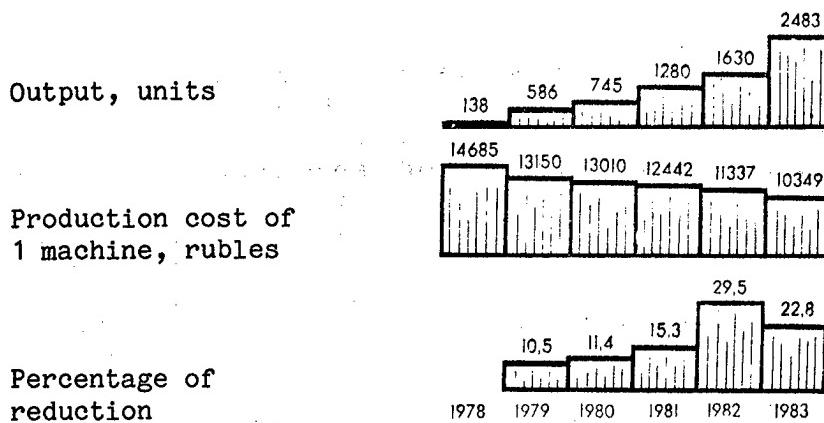
according to all indicators. If the work station is not certified in terms of one particular indicator, we take measures to rectify the situation.

At first we certified only one-fourth of the work stations according to the established requirements. We have now raised this level to 76 percent.

#### Output and Production Cost of Machines Produced



A  
RMS-A Self-Propelled Root-Harvesting Machine



B  
SPS-4.2 Sugar Beet Loader-Cleaner

The concluding document of the analysis is made up of the documents which include, in addition to the conclusions of the certification commission, a list of the necessary organization and technical measures directed toward

bringing the given work station up to a level which corresponds to the progressive decisions. During the course of the certification it was established that work stations were not certified mainly because of the production of outdated sugar beet harvesting equipment which had been removed from production and were temporarily adapted for manufacturing parts and components for the new RKS-6 and SPS-4.2 sugar beet harvesting equipment. All this, in the final analysis, was reflected in the level of correspondence of the work stations to progressive decisions. In order to bring the existing work stations up to a level which corresponds to standard plans for the organization of labor and production, the certification commission developed and submitted a proposal for the introduction of 206 organizational and technical measures which were also included in the plans for technical progress and social development of the collective of the plant's workers.

The analysis also showed that the greatest percentage of work stations that were not certified were in auxiliary production. This is related to the fact that the majority of measures in the plans for technical progress during 1975-1980 were directed toward supplying the basic production. This lack of correspondence is now being eliminated.

One might say that the certification of work stations produced a complete and objective picture of the state of affairs at the plant. We then had the opportunity to manage "with our eyes open" and to make decisions which actually did take into account the condition of production.

#### Elimination of Work Stations

One of the first of these decisions was to eliminate unnecessary work stations which were no longer justified and did not correspond to progressive decisions.

The collective found a reserve to reduce the work positions not only without harm, but even with an advantage. Each work position was comprehensively investigated by engineering methods: did it meet the requirements of the standard plans and scientific organization of labor and, of course, was its existence expedient or not? Was it possible to do without it, and the main thing--how to replace two, three or four work stations with one? In other words, on the basis of standards, a complex of engineering decisions were developed and introduced in order to reduce the number of work stations as a result of putting more progressive equipment and the best technological processes into operation.

By a plant order, a plantwide commission was instituted for organizing and checking on the development and implementation of measures directed toward reducing the number of work stations. In the shops for basic and auxiliary production they organized working groups for developing and implementing measures in this area. The working groups of the subdivisions and the methods commissions were given guidelines, and deadlines and responsible parties were also determined. The assignments were issued on the basis of an analysis of existing technological processes right at the work stations. They were included in the shop plan for labor. The suggestions submitted by the work groups were comprehensively considered by the plant commissions under the

chairmanship of the plant director and, after further development, were heard by the board of directors.

The plant economic service checked carefully on the expedience of the proposals that were made, and subsequently--on the result of the introduction as well. Therefore, this service took on the responsibility for control over the introduction of measures for reducing the number of work stations at the plant.

In order to activate the work, a review-competition was declared for the best suggestion for reducing the number of work stations. It was a stimulus to revise personal and collective creative plans. Engineering and technical workers adopted a number of concrete commitments directed toward the introduction of measures for mechanization and automation of production processes, the introduction of progressive technology, and also improvement of the organization of production and labor. During the course of the certification of the work stations, along with engineering decisions, suggestions are coming in from production brigades regarding releasing work stations at sections in which they work. Thus the brigade which welds the frames of the sugar beet loader made a suggestion to release four work stations as a result of the introduction of more progressive fittings and welding equipment.

Although work for reducing the number of work stations was based on a comprehensive system of control of product quality and effective utilization of resources (KS UKT and EIR) which was successfully introduced in our collective in 1979 and which not only corresponds to the new conditions of management, but is also a means of reducing their requirements and principles into the practice of efficient management activity of the plant.

Beginning in 1979 the plant managed to release about 600 work stations and 50<sup>4</sup> industrial production personnel without the slightest harm to the output of products (see table).

Branch documents determined that with an increase in the production volume of 7 percent, the number of workers was to remain at the level of the preceding year. An increase of more than 7 percent would be accompanied by an increase in the number of workers. But we provided for increasing the production volume by 13.7 percent while still reducing the number of personnel. And the products we produce have not become any simpler, but rather to the contrary, and the prices for them have not changed.

Table. Results of Work for Reducing Number of Work Stations

Years	Release of work stations	Release of workers	Released units of equipment	Value of released equipment thousands of rubles	Released production space, m <sup>3</sup>
1980	205	206	117	1,081	1,000
1981	256	198	197	1,558	750
1982	107	98	140	685	560
1983	102	82	195	558	665
<b>Total</b>	<b>670</b>	<b>584</b>	<b>649</b>	<b>3,882</b>	<b>2,975</b>

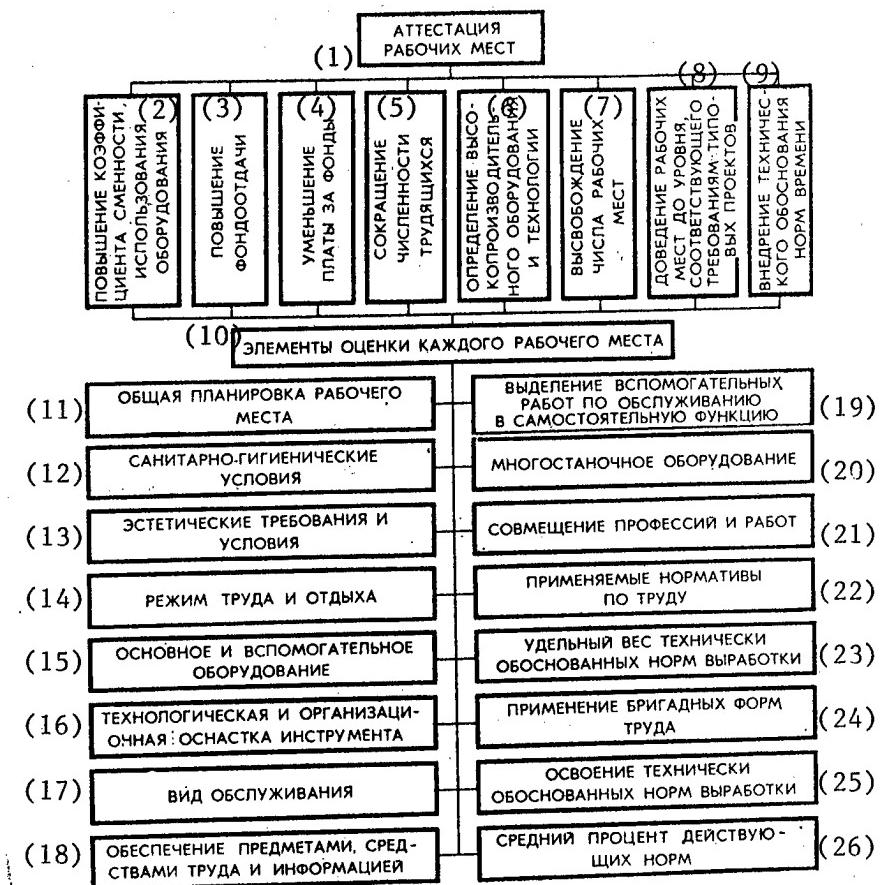
#### The Path to Efficient Utilization of Capacities

The certification of the work stations shows how much unnecessary equipment there is at the plant. For a business person who is familiar with production this picture is not new: at the enterprise there are several machine tools at the same time, and each of them is being used at half its capacity. Moreover, there are also machine tools which can be replaced with others every year or two. And yet ask any shop chief if he has any extra equipment and he will answer no. He thinks that there is no reason to get rid of equipment which he might have a need for at some point in the future. The proportion of universal equipment which is suitable for all events and also less productive equipment is increasing. But still each work station requires a worker. This was our situation as well. The coefficient of the utilization of many machine tools was equal to one. During the process of the certification we gave an assignment to our engineering services to approach each work station with the measures of progressive engineering decisions and to eliminate those work stations which we can make unnecessary, removing the equipment from the foundations and selling it. Let us assume that one kind of part is processed on five machine tools during three shifts by 15 workers. What needs to be restructured in order to make this part at one work station? These are the kinds of problems we solved.

The main difficulty was to interest the shop chiefs in this work. To do this we made the indicator of the output-capital ratio one of the main ones for the shop. Usually such indicators are assigned to the plant by the ministry, but they do not reach each structural unit. But since we had a clear picture of the situation with respect to the equipment in the shop, we decided to give them taut plans for increasing the output-capital ratio of equipment. It would seem that there is nothing special in this work, but it enabled us to activate the process of removing equipment. After 1979 it became 3 times as intensive as it was before, and 2.5 times as intensive as it was in the

country as a whole. Equipment which was removed from the foundations was acquired in places where there was a critical need for it--at small enterprises and in shops. The payment for capital decreased by almost 200,000 rubles a year. The coefficient of shift work reached 1.53.

Chart.



Key:

1. Certification of work stations
2. Increased coefficient of shift work, utilization of equipment
3. Increased output-capital ratio
4. Reduction of payment for funds
5. Reduction of number of workers
6. Definition of highly productive equipment and technology
7. Release of work stations
8. Bringing work stations up to level that meets requirements of standard plans
9. Introducing technically substantiated time norms
10. Elements in evaluation of each work station
11. Overall planning of work station
12. Sanitary and hygienic conditions

13. Esthetic requirements and conditions
14. Conditions for labor and recreation
15. Basic and auxiliary equipment
16. Technological and organizational supplies and instruments
17. Kind of service
18. Provision of objects, means of labor and information
19. Separating auxiliary service jobs into independent function
20. Multi-machine tool equipment
21. Combining occupations and jobs
22. Applied labor normatives
23. Proportion of technically substantiated output norms
24. Application of brigade forms of labr
25. Assimilation of technically substantiated output norms
26. Average percentage of norms in effect

One cannot but take note of the assistance that was rendered to us by workers of the Department of Economics and Organization of Production of Industrial Enterprises of the Dnepropetrovsk State University.

I wish to give my ideas about the methods of calculating the utilization of capacities. I think that it is hopelessly outdated since it makes it possible for the enterprises to have surplus unutilized capacities. For example, a plant has 1,200 units of metal-processing equipment while its capacities can justify only 113 units in the "narrowest," most difficult technological division. And these methods do not take into account the reserves of capacity in other divisions. That is, it orients the enterprises toward retaining surplus equipment.

The products produced by the enterprise change and new equipment is ordered. And they receive it free of charge, through centralized funds. The enterprise orders what it needs but is not asked to return the equipment which it does

not need. It would seem that payment for capital in an amount of 6 percent should cause them to take a responsible attitude toward equipment. But apparently 6 percent is not enough, and moreover no particular individual is responsible for it. It seems that it is necessary to raise the percentage of payment for capital and to design a system of work for efficient utilization of equipment on the scale of the country. The first step should be an essential revision of the method for calculating the utilization of capacity.

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## WAYS OF ACHIEVING RELIABILITY OUTLINED

Novosibirsk EKONOMIKA I ORGANIZATSIIA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 45-54

[Article by G. A. Cherednichenko, deputy director for economics: "How One Provides for Reliability of Work"]

### [Text] Known Measures--In Complex

The successful work of our collective has been conditioned largely by the plant comprehensive system for control of product quality and effective utilization of resources (KS UKP and EIR). It is based on 132 standards of the enterprise which regulate the activity of each work in the plant. The standards encompass the goals and tasks, normatives, forms and methods of work.

Why is a standard good and would it not be better to regulate the work of the subdivisions and individual workers through plant orders? I think not. An order has a tendency to become outdated. But we check on the observance of all standards according to a schedule. From the results of the inspection we prepare a document for the signature of the plant director. It envisions measures for moral and material incentives for workers. Thus the enterprise has no "uneconomical" indicators or areas of work. The comprehensive system of UKP and EIR sets for the collective and each worker clearly substantiated current and long-range tasks and it informs all teams and workers of them. The system operates through constant information concerning the course of fulfillment of plans and assignments, including with the help of the information computer center. The measures for regulating the work are taken on the spot.

Many comrades who have become familiar with the work of our enterprise say that we have little that is principally new. Yes, you will not find anything that is actually unexpected here. But still those progressive work methods which we have studied at the enterprises of the country and have introduced here operate simultaneously and in complex, encompassing all aspects of the activity of the enterprise on the basis of regulatory documents--standards. Practice has developed forms and methods of work whose comprehensive and simultaneous action can lead to a significant rise in the level of work and

the achievement of high production indicators. These include, for example, planning the increase in labor productivity at each work station according to the experience of the Moscow Dinamo Plant for piece-rate workers and production brigades; the Novocherkassk system of operational calendar planning; the Saratov system of defect-free manufacture of products; the Lvov system for improving the quality of products and labor; the Shchokino system for increasing production volumes as a result of increasing labor productivity; and the multifaceted experience of the VAZ. Thus under the 10th Five-Year Plan we began with the introduction of brigade forms of labor organization in the work sections that are most difficult for the plant--the repair services of the enterprise--and we introduced the normative piece-rate-plus-bonus system of wages. This made it possible to carry out tasks for increasing labor productivity. Under the 11th Five-Year Plan we proceeded further: we are achieving fairly good results by certifying the work stations to make sure that they follow the rules for scientific organization of labor, reducing the number of work stations and workers as a result of engineering decisions, changing brigades over to work using principles of cost accounting and planning the indicator of the difficulty of the plan for the main shops of the plant.

We are now developing an intraplant management mechanism which will make it possible for the plant collective to carry out the difficult tasks of the 12th Five-Year Plan. The basis of this mechanism will be the comprehensive certification and streamlining of work stations, technological processes, brigades and shops. Here we are taking advantage of the experience accumulated at the Dneprov machine-building plant.

We think that the time has come for mandatory introduction at enterprises of the advanced work practice of the best collectives. It is necessary to move from a conviction of the expediency of changing over to better forms of work to actual introduction of these forms into the work practice of the collectives of the enterprises and organizations, taking their peculiarities into account, of course.

Even before the development and introduction of the KS UKR and EIR at the plant, a good deal had been done for better utilization of capacities, the development and placement in production of new and better machines, the strengthening of discipline and the creation of a stable collective. But up to a particular time all these measures were carried out separately, without efficient and constant coordination. The situation was such that while we burst ahead in one area, at the same time we were behind and had to "catch up" in another. Moreover, decisions were frequently made by the trial-and-error method and regulation was carried out either after a deviation from or during the process of the implementation of a production or economic decision. We thought: is it not possible to make decisions on the basis of a system of standards that regulate not only the forms and methods of the work of all individuals participating in a particular function, but also take into account the final results of these decisions?

We already had a certain amount of positive experience in regulation and achievement of high quality indicators on the basis of a comprehensive system of quality control of products (KS UKP) on which we had begun working in 1976.

But why not create a similar system at the plant for control of personnel, socialist competition, and the utilization of material, labor and energy resources and finances, that is, control of the economy? The guidelines in this work were the recommendations of the Dnepropetrovsk Oblast Party Committee for creating a comprehensive system of product quality control and effective utilization of resources.

Our system is based on the following principles:

control of product quality and effective utilization of resources is carried out at all stages of the life cycle of the products and at all levels of management of the enterprise (that is, in the stage of development of products, preparation of production and series output, and in the stage of the operation of machines);

the organizational and technical basis of the system comprises standards of all categories (GOST's [All-Union State Standard], OST's [All-Union Standard] and standards of the enterprise), provisions, instructions and normatives which are approved by the ministry and the all-union production association;

active utilization of material and moral stimuli for fulfillment of the most important planned indicators;

comprehensiveness, that is, simultaneous implementation of intercoordinated technical, organizational, economic, social and ideological measures when controlling product quality and the effective utilization of resources;

control of product quality and effective utilization of resources are carried out on the basis of the implementation of six intercoordinated general functions and 16 special functions. The general functions include planning, organization, control, accounting, analysis and regulation.

The structure and composition of the system envision possibilities of its further improvement as a result of consistent introduction of advanced experience in the organization and control of production, prompt utilization of the latest achievements of science, the application of computer equipment and extensive mechanization and automation of production processes. The work method is regulation of the production process according to deviations. A typical feature of the standards is that they take into account the requirements of intensification of production.

#### How Does the System Work?

At our enterprise successful operation of the KS UKP and EIR is determined by a system of intraplant operational planning. All shops work toward the final result--machines which are originated in the combine assembly shop, on the conveyors. How is this achieved?

Operational intraplant planning is directed toward providing for a stable amount of incomplete production. We divide the entire volume of annual output into groups according to the number of working days. The products of one such group on the products list and in rubles constitutes a daily set. Depending

on the activity of the technical cycle, the labor-intensiveness, the number of parts that go into one machine, the number of trips to and from the shop and the sizes of the batches of parts, we determine the unreduced reserve of incomplete production. And this reserve should be comprehensive. It includes parts, the reserve of which amounts to 12 days, 3 days or 2 days, that is, the conveyor can operate without halting for another 12 days, 3 days and so forth. But, depending on the labor-intensiveness of the manufacture, all these parts can be included in a group of items which are to be used immediately. This means that efforts must be concentrated on them. Thus our dispatchers are concerned about the availability not of those parts which are needed this minute, but of those which can be used up immediately. Material and technical supply has been arranged analogously. Its activity is also based on an advanced standard. Like all enterprises, our enterprise suffers from delays in the deliveries of batching items and raw materials. But because of the advanced standard we managed to take measures on time: we make replacements and so forth. Plan schedules are drawn up from the daily sets of parts.

The movement of parts is accounted for through the automated control system which was developed by plant specialists. Each day the foremen submit a working document to the information computer center--the "foreman's key," which indicates the quantity of parts (and what kinds) he has sent to the warehouse for prepared products today. On the next day, before the beginning of the shift he receives the "key of the foreman" back with an indication of what parts he is to make today and how many.

Thus everyone in the plant is working on comprehensive production of the products.

The task is clearly set: the number of sets of parts for the day in keeping with the monthly plan-schedule forces the managers of the shops to provide for the manufacture of precisely those parts and components which the enterprise needs now and not to try to get ahead of the plan by producing items that are more advantageous and less labor-intensive. For not a single one of these in excess of the admissible coefficients of the comprehensive work will be credited to him.

On the other hand, if the assignment is clearly determined, it is easy to check on its fulfillment. Daily accounting for the products that are produced in the daily sets eliminates both jumping ahead and trying to catch up at the end of the month. In our plan the fulfillment of the plan during any 10-day period is equal to 33-34 percent of the monthly assignment. And if the first 10 days is different from the rest, it is only in that the percentage of the fulfillment of the plan in it is slightly higher--about 36 percent. This is because of the reserve that is created in the preceding month. The plant works with a coefficient of rhythm which is equal to one. And an efficient rhythm means order in the plant and the possibility of introducing scientifically substantiated norms.

#### When a Difficult Plan Is Advantageous

Now let us touch upon one more problem--the adoption of taut plans. Calls for this usually fall upon deaf ears. There is a risk: if one does not manage to

fulfill the plan the collective is deprived of its bonus and the material incentive from the additional profit that is obtained (the 13th wage) does not compensate for this loss.

We have developed a system of incentives for plant subdivisions to adopt and fulfill more difficult planning assignments. We have introduced the coefficient of the difficulty of the plan--the ratio between the earmarked assignments for the current year and the reported results of the past year. Indicators have been determined for evaluating the difficulty and material incentives have been formed.

For instance, in the main shops four indicators are used as a basis: the number of industrial production personnel, the wage fund, the production cost and the output-capital ratio. They are directed toward the intensive path of development. If the shop adopts a plan that is 10 percent more difficult than the plant plan, the amount of the bonus is increased by 5 percent of the overall sum, and if it is less difficult--the converse is true. The risk has come to be justified, the fear of losing the bonus because of the difficulty of the plan has been eliminated, and instead of the past not unjustified fears there is a quite realistic possibility of achieving an increased bonus.

Moreover, because of the fear of losing some of the bonus for the entire year, the management of the shop and general shop personnel reduce the sum of the value of fixed industrial production capital by reducing the work stations, carry out the assigned volume with fewer workers, reduce expenditures on production and so forth. Thus it is as though the engineering and technical personnel earn their bonus by increasing the difficulty of work and intensifying production.

#### Basic Attention--To Quality

High product quality is achieved by work in two directions. First, organizational measures. Thus, guided by standards, we have arranged efficient work of the technological control service. We have created comprehensive brigades of controllers and introduced the point system for payment for their labor. Each day an evaluation is given for the carefulness of inspections: if a defect has been missed, a point is subtracted. There is an inspection team for input control operating at the enterprise, which consists of 17 people headed by a foreman. It has become a reliable guarantee against others' defective work.

Second, there are measures for economic influence on the quality of labor at each work station. They are producing a large effect. We mix the earnings of the workers directly dependent on the quality of the labor, applying the widely known and time-tested Saratov system of defect-free manufacture of products and their release when first submitted. We have divided the bonus from the wage fund into two parts, which are either equal or not, depending on the kinds of the work. Thus in mechanical processing 20 percent of the bonus is paid for high quality of the products, and 20 percent for increasing labor productivity. And for welders all 40 percent is paid for high quality. Here the indicator of high-quality work is defect-free release of products when first submitted. In order to ensure objectivity in evaluation, we have taken

the technical control divisions out of the jurisdiction of the shop chiefs. Thus their earnings do not depend upon the shop's fulfillment of the plan. If the brigade releases all of its products when first submitted it receives the full amount of the bonus for high-quality work, and if they are released after being submitted a second or third time, it receives only half the bonus. If it is established that they have been submitted more than three times, the bonus is not paid at all. This system is rigid, but effective. The main thing is that the bonus is no longer a simple addition to the wage rate. The workers are earning it.

The competition for the title "Outstanding Quality Worker" and for the worker's individual mark (about 300 people in the plant) is effective. In order to achieve this it is necessary to work for no less than a year without having to submit products more than once. Those who have their individual mark receive a bonus from the material incentive fund in the amount of 5 percent of their quarterly earnings. In order for this sum to be more appreciable, we pay it once a quarter (it turns out to be 30-35 rubles).

In the work for improving product quality we attach a great deal of significance to effectively organized socialist competition within the enterprise. We control the process of competition through the selection of indicators, thus mobilizing the collective to achieve the tasks which are being carried out by the plant. Thus in 1983 we were faced with the task of earning the State Emblem of Quality for the SPS-4.2 sugar beet loader. The party committee, the administration and the Komsomol committee mobilized the collective to achieve precisely this goal. It was suggested that the collectives of the shops and divisions study their possibilities of improving the quality of the loader. Moreover there were not enough indicators used to sum up the results, and they were clearcut, tangible and understandable to each worker of the enterprise. We do not strive, as is sometimes the case, for a large number of indicators and coefficients. We think that if there are too many of them they lose their clarity and intelligibility and, along with this, also the workers' interest in fulfilling them.

Each brigade defended its commitments before the commission. The commission was headed by the plant's deputy director for economics, and included the secretary of the party committee, the chairman of the plant committee, the secretary of the Komsomol committee, leading workers and Heroes of Socialist Labor. The commission adopted a decision concerning the correspondence of the difficulty of socialist commitments to the tasks that were being carried out by the plant and the capabilities of the brigade. Then the shop collectives defended their commitments before the plant commission. The engineering and technical workers are awarded bonuses for a whole number of indicators which are classified as indicators of the quality of labor. Each group, bureau and shop and division service has its own indicators established. And these indicators (as a rule, there are 10 of them) consists of three blocks: fulfillment of the plan, labor discipline and quality of labor.

The results of the work for improving product quality are evident at the plant, whether it is very important that not only each worker, but also the entire collective of the plant be firmly convinced that to work well is more advantageous than to work poorly. Of course, a certain amount has been done

in this area. Thus, having been first in the branch for 50 quarters, we receive about 40,000 rubles and bonuses. We make deductions for social, cultural and personal services and we are increasing the material incentive of the workers to achieve high concrete results. But we should like for the results of the work of the enterprise to have a more appreciable effect on its material situation, on the provision of social-cultural and domestic services, and on the earnings of each worker.

Thus the prices for new technical equipment now depend on the sum of expenditures on their production and profit. The effect from the application of the technical equipment in the national economy is released to the consumer free of charge. I think that we should motivate the enterprises to introduce new technical equipment by taking the national economic effectiveness into account in the price of the industrial product. The level of profitability will be higher than it is at the present time (for agricultural machines--14.8 percent) and there would be a corresponding change in the amounts of deductions into the economic incentive funds. For example, we stimulate the development of new machines and their delivery to production on the basis of state interests, striving to carry out the state task for mechanization of sugar beet harvesting as well as possible. But the plant collective has no material incentive for its introduction. The existing mechanism for stimulating the output of new technical equipment does not "work" completely.

The existing system of awarding the Emblem of Quality does not rectify the situation, and sometimes even makes it worse. The enterprise submits its products for the Emblem of Quality to the state commission, the chairman of which is the consumer. When giving his agreement to award the Emblem of Quality, the consumer thus automatically gives his agreement to pay our plant the added cost for quality out of his own pocket. As a result, it is possible to have situations in which not a single one of our machines has received an increment for the Emblem of Quality. And the increase in the amounts of the material incentive fund is not comparable to the losses of the increments. I think that we should place a neutral organization at the head of the commission, for instance, the USSR Gosstandart [State Committee of Standards].

#### A Regimen of Economy

The system of control of economizing on metal at the plant is a constituent part of the plant comprehensive system for control of product quality and the effectiveness of the utilization of resources. It is a complex of standards that regulate the activity of the designers during the period of development of the designs of machines, of technologists--during the period of technological preparation of production, of production workers--during the period of manufacture of the product, and the operation service--during the period of operation of the machines on the fields of the country and the determination of the volume of the guarantee deliveries of spare parts.

The analysis we conducted shows that the greatest economic effect is produced by the following measures:

the application of standards of the enterprise which limit the selection by the designer and technologist of the make and profile of the rolled metal that is used, which leads to economizing on it and reducing production outlays;

normative release of material resources to accountable people with subsequent control over the measure of their expenditure among various items;

the utilization of production wastes on the basis of the plant standards of the enterprise;

personal accounts for savings;

the application of a system for evaluating the work of the plant subdivisions according to the indicator of economizing on metal;

the organization of creative brigades and review commissions for economical utilization of metal;

moral and material incentives for subdivisions and individual workers for economizing on metal;

participation of public organizations in solving problems of economizing on metal.

Measures for economizing on metal are included in the general plant organizational and technical plan. The system for managing the economizing on metal at the plant which is realized at the level of the divisions, shops, bureaus, sections, brigades and work stations within the framework of the KS UKP and EIR, envisions basic resource-saving measures in the stage of planning of machines, preparation of production, output of machines and their operation.

High effectiveness in reducing norms for the expenditure of materials is provided by the fulfillment of the enterprise standard "calculation of progressive normatives for the expenditure of materials and planning of their reduction." The introduction of the standard made it possible to regulate the allowances and the wastes in the chuck, the dimensions of the connectors during stamping, and so forth.

The utilization of wastes in production is an important task. For this purpose the plant has developed and introduced the enterprise standard "the formation, utilization and accounting for production waste." As a result of the work that has been done, in the production of agricultural machines part are manufactured from technological wastes or scrap: for the RKS-6 machine we utilize 196 kilograms, the RKS-4--162 kilograms, and the SPS-4.2--221 kilograms. This made it possible in 1982 to use 1,440 tons of waste instead of standard metal.

The manufacture of consumer goods from wastes is expanding at the plant. Such items as brackets for linen hangers, carbon steel knives, and collapsible scissors are manufactured from production wastes. The profit from the sale of consumer goods manufactured from wastes amounted to 16,700 rubles in 1982.

The unutilized commercial wastes are shown in the catalogues with a breakdown according to profiles and makes of steel, with a depiction of their configuration and the volume formed during the year. These catalogues exist in all of the shops and services of the plant. Because of this, all workers in the plant can participate in searching for ways of utilizing the wastes better.

Attention should also be given to other forms of the regimen of economy. In the shops and their subdivisions personal accounts have been introduced for economizing on material resources. In the smelting shop, for example, all teams work according to them: sections, shifts and brigades. As a result, during last year they saved 950 kilowatt-hours of electric power, 600,000 cubic meters of natural gas, 120 tons of conventional fuel and 21,000 rubles' worth of basic and auxiliary materials.

It is precisely the system of KS UKT and EIR that made it possible for us to bring together all elements of management and use them for fulfilling our major task--prompt output of high-quality sugar harvesting equipment.

#### FOOTNOTE

1. An article on the experience of the Dneprov machine-building plant in certifying work stations will be published in one of the future issues of the magazine.--editor's remark.

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CSO: 1820/31

DESIGN BUREAU CHIEF INTERVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 55-66

[Interview with V. G. Kuz'minov, deputy chief of the Special Design Bureau for New Technical Equipment, by L. Shcherbakova: "Not an Individual Machines, But a Set of Machines"]

[Text] [Question]: Vadim Georgiyevich, your design bureau has developed an entire set of sugar beet-harvesting machines. What kinds of machines are they and what distinguishes their designs from their analogues?

[Answer] Indeed, during the past five-year plan we have managed to complete the mechanization of the work for harvesting sugar beets. The machines that comprise this group include the BM-6A top-harvesting machine which we developed and which is produced by the Ternopol combine plant, the RKS-6 root-harvesting machine and the SPS-4.2 sugar beet loader.

Since the first postwar years the enterprise has been specializing in sugar beet-harvesting equipment. From the one-row trailer combine which was produced in 1948 to the self-propelled six-row series-produced combine which was assimilated 7 years ago--such has been the path of development and improvement of the harvesting machines which the enterprise supplies to agriculture. The changeover to the output of four- and six-row self-propelled root-harvesting machines instead of the first trailer machines which were produced at the plant increased labor productivity in sugar beet harvesting 30-fold. Moreover, three people were released from each set of harvesting equipment. The service life of the new root-harvesting machines increased by one-third as compared to the old equipment and amounts to 8 years. The machines provide for high-quality harvesting of sugar beets with minimal losses and damage to the roots. One must say that these machines have the best indicators for preservation of the roots among domestic and foreign models of their kind. This is achieved as a result of the digging device which we have patented and for which there is an author's certificate. A total of 21 inventions are used in the design of the machine.

Among the merits of the harvesting machine, and of the loader too, one can include the fact that as a source of power it uses the MTZ-80 tractor. At the end of the sugar beet-harvesting season (and this is a maximum of 2 months) it

can be disassembled and used for other work during the remaining 10 months of the year. And when the harvesting season comes around again it is easy to put it back--this takes about 4 hours.

The SPS-4.2 self-propelled sugar beet loader and cleaner, which has a productivity of 200 tons per hour, is intended for loading the sugar beet roots and also other roots from heaps in the field into means of transportation while removing the remaining dirt and tops from them. The design of the machine includes 13 inventions. The following data show the productivity of the loader. The ZIL truck with a trailer is loaded in 5 minutes, and the KAMAZ with a trailer--in 8 minutes. The idle time of automotive transportation during loading has been sharply reduced. Our old loader took 40-50 minutes to load this same ZIL with a trailer. Moreover, the loader cleans the sugar beets of impurities--earth and plant residues.

Such is the set of machines for harvesting sugar beets.

One must say that the total national economic effect from the machines produced in 1982 alone amounted to 63.8 million rubles.

[Question] How were these results achieved?

[Answer] Good results are produced by the application of system planning. The method that was applied previously envisioned sequential solutions to individual problems and did not encompass all the problems of comprehensive mechanization of the production process of sugar beet harvesting.

With system planning each new machine is regarded as a subsystem which is included in the complex. Its functions are determined for performing operations in the entire technological process of harvesting, and interconnections are established among them with respect to productivity, quality indicators and energy-intensiveness, taking into account maximum unification of the machines in the complex. Here one studies and takes into account the energy availability, the availability and types of means of transportation, the technical level of the personnel and the condition of the agricultural repair basis.

Unification of parts and components helps to economize on labor and material resources and to improve the operational qualities of the machines. The level of unification for the SPS-4.2 loader is 73 percent, and for sugar beet-harvesting machines--95 percent.

We consider it to be of principal importance to work in close contact with plant specialists. We create the kinds of machines which the plant can produce. A mandatory stage in planning is the coordination of the components with the technologists and with the entire engineering service. The design bureau includes a bureau which engages in service for series production. The chief of the design bureau has two deputies, one of whom handles series production. We find mutually satisfactory solutions in all cases.

The next thing which I should like to note are the close ties with science, for example, with the All-Union Institute for Mechanization of Agriculture.

A great deal of significance is attached to reducing the labor-intensiveness of the manufacture of machines and economizing on raw and processed materials. For example, in order to reduce the weight of the machines, we are conducting an analysis of the design, keeping in mind replacing rolled metal with a less metal-intensive profile. Thus in the RKS-6 and SPS-4.2 machines we have introduced ball bearings, thus reducing the labor-intensiveness of their manufacture and the metal-intensiveness. Work has been done in the same direction to make the elements of the frame lighter. The durability of the frame has been retained, but the expenditure of metal has been reduced. As a result of a change in the design in 1983, 1,250 tons of metal were saved. If one is to take the overall figures, during the 7 years of the production of the root-harvesting machines the norm for the expenditure of rolled metal for it has been reduced by 28 percent. Because of this, in 1982 alone we saved 7,500 tons of rolled metal. The picture is similar with respect to the sugar beet loader. On the whole the proportional expenditure of rolled metal was reduced to two-fifths the previous level during the 7 years. The average annual reduction of the norms for the expenditure of rolled metal was 4.6 percent. As a result of the resources that were saved in excess of those set by the planning assignments, 600,000 rubles' worth of products are produced annually.

[Question] And in your ministry what is the average annual reduction of norms for the expenditure of rolled metal?

[Answer] Little more than 2 percent.

[Question] And so the experimental model of the machine is ready. The plant is moving on to its testing. The way this matter is arranged is causing negative responses in the country. How is the testing of experimental models of machines organized at your plant?

[Answer] We devote a great deal of attention to the testing of our machines. We consider it inadmissible to have a situation in which the machine is sent for state testing and the commission fills up two or three pages with the shortcomings that have been revealed. We have arranged things in such a way that the shortcomings are revealed before the state tests are conducted. There is only one way of doing that--maximum loading of the experimental models during the preliminary tests.

The state machine-building stations (MIS's) do not provide for effective preliminary testing, they do not fully carry out the tasks that have been set for them, and they are not interested in doing this. It sometimes happens that in 2 months they use our machine to harvest only 3 (3!) hectares of sugar beets, while we cover 200-250 hectares. Therefore the only thing on which we can rely at the MIS's are the agricultural analyses and the measurement of the weight distribution of the machines, since the stations are excellently equipped technically and they conduct measurements professionally. But we obtain the main information about the operation of our machines from the leading farms of the country which can maximally load the machines and with which we have established good business contacts. We ask them to give the machine a greater load during a season than is envisioned by the norm. And,

finally, we produce machines with an eye for the time of their operation on the farms of the country.

[Question] Vadim Georgiyevich, it would be interesting to compare your machines with analogous domestic and foreign models. How are your developments better, and what would you not mind adopting?

[Answer] As you understand, my evaluations may not coincide with the opinions of others. But I shall still try to answer.

As for comparisons with foreign models, our machines are just as good as they are in all ways. For several years we have been conducting tests in conjunction with French firms. On our fields domestic machines operate better in terms of all indicators. This is natural: we make them strictly for specific requirements, and the French do not know our conditions. Moreover, we have different requirements for preserving the harvest. They process the sugar beets immediately and therefore they do not need to limit the damage to the roots. The capacities of our plants are limited and therefore it is very important to protect the roots during harvesting.

Our cooperation with one of the French firms is developing fairly successfully. They want to borrow our automated machine for following the rows so as to raise the technical level of their machines. And we want to borrow their experience in creating vibrating digging parts for machines that operate on compacted soil. Representative of the firm assure us that their machines operate well on the dense African soil. We shall test them under our conditions and see...

[Question] Tell us, please, about the long-range plans of your design bureau. What machines will you be offering to the consumer in the near future?

[Answer] Our plant has now developed a program for creating means of mechanization for harvesting sugar beets up to the year 1990. What I have said above pertains to root-harvesting machines.

If one is to speak about top-harvesting equipment, we wish to protect the root by regulating the height at which we cut off the top. Since the roots vary considerably in height, we cannot yet achieve the necessary quality of cutting with a series-produced machine. The machines move at a speed of 2 meters per second, and there are eight roots in these 2 meters. The machine does not manage to change the height of the cutting. We have gone over to "two-stage" cutting of the top: first to a height of 5-6 centimeters, and then lower. This protects the head of the sugar beet, and the sugar juice will not leak out and evaporate. According to the data of well-known machine operator, Ye. N. Parubok, during a harvesting season the experimental model of the new machine made it possible to preserve 30 quintals of sugar beets per hectare.

From the results of the state tests and the tests on the kolkhozes and sovkhozes, the Combined Scientific and Technical Council of the USSR Ministry of Agriculture, Ministry of Tractor and Agricultural Machine Building and Goskomsel'khoztekhnika recommended the self-propelled top-harvesting machine with two-stage cutting of the tops for series production.

Now about loaders. Today's task is to provide the possibility of loading those roots which have been left in the clamps because of the negligence of workers, the absence of transportation or other factors. The roots remain on the field and if there is rain after this it is practically impossible to pick them up from the clamps with loaders: the machine slips. We are introducing a rake feeder which will be inserted into the caked roots and will pull the loader toward the plant. As a result, the slipping will decrease. We have three loaders like this in the country and so far our hopes are justified. The only thing which bothers us about this machine is the poor reliability of the hydraulic distributor, of which we are receiving underdeliveries and which we use to drive the rake.

[Question] And what will your design bureau have to do to solve these problems?

[Answer] This is a painful issue for us. The staff of the design bureau now includes 205 people. There are only 120 designers. One must say that the collective of designers was formed long ago--20-25 years ago. These people have not only a great creative potential, but also the richest experience. They know all the fine points of their business, right down to the trivia--and all the requirements which the consumer and the operating conditions placed on the machine. As a result of all this, we can make complicated machines in short periods of time.

But the collective obviously must be rejuvenated since our leading workers are 40-45 years old. So far we have not managed to do this. We have been sending applications to the ministry for 20 people, and they send us two. Of course we have also raised the question of expanding the staff to the plant management, but this problem cannot be solved through the forces of the plant alone.

[Question] And one more question which frequently arises when speaking about design work. Is the work of a designer prestigious in your opinion? What is the state of affairs at your plant?

[Answer] I can say that we respect the labor of the designers at our plant. This probably depends to a large degree on the attitude of management toward us, primarily that of the director. I do not think that you will find very many plants in which the director devotes as much attention to the design service as ours does.

I repeat that they respect the labor of the designers in our plant and listen to their opinion. But external organizations frequently give us tasks that are not thought out well enough. Contradictions arise between the clients and the developers in which, as a rule, the developer ends up being the one who "suffers."

[Question] Perhaps you could discuss this in greater detail? As far as I know your client is Sel'khoztekhnika....

[Answer] Planning and design developments should be evaluated on the basis of a unified normative and technical document which is signed by the three parties--the ministries of agriculture and agricultural machine building and Sel'khoztekhnika. This is envisioned by GOST 15001-73. But now each department has its own branch standards by which these departments are guided. And these disjointed interests converge at one point--where the machines are created and produced, at the enterprise. It is the one that suffers from this situation. We must satisfy all of these requirements.

First of all, when setting a task for us the client does not take into account the differences in the conditions for the operation of technical equipment. Thus we were given an assignment to provide for a coefficient of readiness for operation of root-harvesting machines of 0.95. That is, the machine can stand idle for various reasons for only 5 percent of the time. And the conditions under which the machine operates are simply not given any attention, and the background of the field is not taken into account. Let us say that the number of weeds per linear meter is supposed to be 2-3, while in practice there are up to 50. And working in this kind of field of tall weeds, the new machine is supposed to provide for a coefficient of readiness of 0.95!

The same thing pertains to losses and damage. The roots are supposed to be located in the rows and there is only supposed to be 3 centimeters between them. In practice this distance can be as much as 6 centimeters. Our machine weighs 5-6 tons. How can it manage not to damage a single root if it is harvesting six rows at a time?

It is interesting that in the first stage of development of the order--in the Institute of Sugar Beets--the real state of affairs is taken into account, but when the document is returned from the ministry it is changed beyond recognition. And it is not signed by our ministry. Thus the agricultural agencies end up with a level which they can use to exert pressure on the enterprise throughout the entire time during which the machine is produced. This problem has become permanent and eternal.

I think that the agrotechnical requirements should be differentiated according to the conditions as is done abroad, and the evaluation of the operation of the machine should depend on this.

And sometimes it even happens that the consumer demands a machine as does our ministry as well, and we cannot obtain the agricultural requirements from the Sel'khoztekhnika agencies. As a result, the enterprise is penalized for failure to fulfill the order. There are cases in which we are given requirements which are absurd from our standpoint. For example, it is required that we introduce into the sugar beet loader a device for maintaining the height from which the roots fall at the level of 0.5 meters above the level of the bed of the trailer. One device like this, which was developed in the USSR, cost 4,000 rubles. And the entire machine costs 11,000-12,000 rubles.... But the question of raising the price is not even considered! Of course, this is economically disadvantageous for the plant.

It seems that it is necessary to place requirements on the planning of agricultural machines which take into account above all the interests of the actual consumer--the agricultural enterprises.

[Question] Recently in many regions of the country party workers and agricultural workers have been raising the issue that trailer agricultural implements are more effective than self-propelled ones. They are also pointing out the unnecessarily long periods of idle time of the engines. What is your attitude toward this problem?

[Answer] Of course, if the trailer implement, in terms of its consumed capacity, corresponds to the tractors that are produced in the country, there is no need to make it self-propelled.

But frequently the capacity of the engine of the agricultural implement that is produced, in terms of its technological specifications, should be greater than that of the series produced tractors. Then it is necessary to design self-propelled implements. The situation cannot be saved even by the MTZ-80, especially when it comes to machines that are intended for harvesting grain crops. Here it is necessary to make self-propelled combines with an engine capacity of up to 150 horsepower. The solution to the problem depends not on the designers' lack of desire to design trailer implements instead of self-propelled ones, but on the lack of tractors with large capacities, especially row tractors.

#### Consumer Evaluates Sugar Beet-Harvesting Equipment

The RKS-6 machine has high technical reliability. The combine is equipped with an automatic device for steering the vehicle along the rows of sugar beets, which considerably facilitates the labor of the machine operator and improves the quality of the products. The electrical equipment makes it possible to harvest the sugar beets at night. The active root-processing organs makes it possible to conduct high-quality harvesting on overmoist soil. Therefore we can move up the beginning of harvest time to better agrotechnical periods. The decision to use the MTZ-80 tractor as a means of energy is a fortunate one. After the seasonal harvesting it can be used for other agricultural work.

N. Gintov, chairman of the Komsomolets Kolkhoz in Krasnodar Kray.

During the 1983 harvest season the new RKS-6B root-harvesting machines underwent testing on the field of our kolkhoz in two modifications--with disk and fork-like digging devices.

The machine with disk-digging devices can work as well as the KS-6B machine,<sup>1</sup> but it has a simpler and better design of the digging device and provides for smaller losses and less damage to the roots as a result of the more precise movement along the rows, the new cleaning device and the fact that it follows the release of the soil better.

The machine with the fork-like working organs harvested the sugar beets from an area of 110 hectares in 2 weeks (the productivity of the roots was 540

quintals per hectare), working only by the flow method. With full provision of automotive transportation it is realistic to harvest 15-17 hectares a day. The machine is reliable and has a high operating speed (7-9 kilometers per hour) and productivity--as a result of the use of a powerful engine. The loading elevator provided for maximum loading of any transportation. The quality of the pickup of the roots and removal of impurities from them is high. The losses amounted to no more than 1 percent. The machine is put together successfully and intelligently, which provided for convenient and accessible technical servicing and inspection. The control devices are located conveniently in the cab. The hydrostatic gear on the reinforced axle of the front wheels worked faultlessly.

The machine received the highest evaluation of machine operators. It was pleasant to work on it. The power, comfort and ease of control, the high quality of work, the reliability of the components and the modern appearance won our machine operators over. The machine is as good as the best foreign models and has considerably surpassed the RKS-6 which we all respect.

We are grateful to the designers and workers for producing this good new machine and we earnestly request that one RKS-6B machine with fork-digging devices be left on the kolkhoz for further testing. We hope that the plant will exert all efforts for the most rapid introduction into serious production of the RKS-6B root-harvesting machines which are very necessary to agriculture. This will contribute to successful fulfillment of the Food Program.

The machine operators participating in the testing work: O. N. Parubok, a member of the Central Committee of the Communist Party of the Ukraine, deputy of the UkrSSR Supreme Soviet, Hero of Socialist Labor and winner of the State Prize; N. I. Kulibaba, holder of the Order of Lenin and Order of the October Revolution; V. A. Mishchanin, holder of the Order of Glory of the Third Degree; P. T. Kulibaba and V. F. Martynyuk, machine operators, V. Ya. Bugaychuk, leader of the tractor brigade, and V. A. Vinyavskiy, assistant brigade leader.

M. A. Zaychuk, kolkhoz chairman; T. I. Spivak, secretary of the party organization; A. V. Kolomiyets, head engineer; and N. Z. Drach, head agronomist.

#### FOOTNOTE

1. This machine is produced by the Ternopol combine plant--editor's remark.

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## IMPORTANCE OF CONSUMER CONTACT STRESSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 66-70

[Article by A. N. Ushakov, chief of the Design and Technological Division for Operation and Reliability of Testing: "Direct Contact With the Consumer--A Necessity!"]

[Text] In 1979 an order came down from the ministry concerning the organization of support bases for enterprises. Our division was organized on the basis of this order. It was created on the basis of the plant's head design bureau. The majority of the main specialists of the service came from here. The main goal of our work is to improve the control of product quality in the stage of operation.

The delivery of complicated self-propelled sugar beet-harvesting machines to agriculture has created certain difficulties in their assimilation. This is brought about by the seasonal nature of the utilization of the machines, the relatively small concentration of technical equipment in the places of their utilization and their small degree of mobility. Moreover, the level of technical training of specialists in agriculture is lower than in industry, and one and the same machine operator will work on many agricultural machines during the course of the year. It was necessary in the shortest possible periods of time to help agriculture to master the complicated new machines and to increase the effectiveness of their operation. And this is impossible without direct ties with the farms that operate our equipment.

The structure of the division is as follows:

The Bureau for Predicting the Need for Spare Parts. It develops a list of the reserve supply of spare parts and normatives for them. Additionally, it sends spare parts to the consumers and checks on their utilization. We have an accumulation warehouse at which we accumulate spare components and parts. As the supply of parts at the support basis is expended, we restore it so that the reserve is never depleted.

The Bureau for Increasing Reliability and Testing determines the indicators of reliability under the conditions of ordinary operation. We have more than 50 sugar beet-growing oblasts in the country and, of course, the data which come

from them give a realistic picture of the operation of our machines. The Bureau for Reliability conducts research and experimental design work for increasing the reliability of components and parts of series-produced machines and for testing them. Thus in 1983, in keeping with the results of the development of this bureau, a new gear for the digging parts was introduced and put into series production. It turned out to be less expensive and more durable, and the breakdowns of this component were reduced to one-tenth the previous amount.

The Bureau of Diagnostics. One of the main areas of its activity is the creation of methods for operating the machines and for diagnosing breakdowns. A machine that has broken down cannot always be dismantled during harvest time. Therefore it is necessary to go by external signs in order to reveal the cause of the breakdown and to eliminate it in the shortest period of time. This is especially complicated because our machines are updated every 5-7 years and there are no previously developed methods. We create them anew for each new machine.

But all this work would be impossible without the organization of support bases for our plant in almost all the sugar beet-growing regions of the country. Before each harvest almost all of the specialists of the division go out to the local areas, to 36 support bases. What do they do there?

First and foremost, they engage in practical training of the machine operators. Our machines operate from 2 weeks to 2 months a year. And each year approximately 30 percent of the machine operators who operate them change. They do not know the machine very well. Therefore we make agreements with the oblast agricultural administrations which make sure the people attend, and with Sel'khoztechnika, which gives us machines on which to conduct practical classes with machine operators and to familiarize them with the innovations. And all this takes place not in class, but around the technical equipment, and people have the opportunity to touch each part and each component with their own hands.

Then our specialists prepare the machines that are under warranty for the next harvest season. And there has still not been a case in which they were not ready for work, even though there are now about 15,000 of them.

The necessary supply of spare parts is created at the support bases and the workers of the support bases repair the machines that have broken down.

During the harvest time representatives of the plant, at the request of the farms, do complicated adjustments and regulation right out on the field. In 1983 alone 750 complicated regulations of machines were conducted. Then the machine operator who is working on it, taking advantage of the method of diagnosis, notifies the manager of the support base of the possible reason for the breakdown by telephone. Our worker goes to the kolkhoz, already having with him the component or part which is most likely to have started to malfunction. Thus there are almost no long periods of idle time of our technical equipment during the harvest.

At the end of the harvest season we help the agricultural specialists to determine how many spare parts they need to restore the machines. In conjunction with Sel'khoztekhnika specialists and managers of the kolkhozes and sovkhozes we draw up the notification of defects and, on the basis of this, send the necessary spare parts to the farms. We establish which components and parts have malfunctioned as a fault of the farm workers (because they did not do technical maintenance on time, or the fields were not properly prepared for harvesting), and which are unreliable for the measures need to be taken to improve their reliability at the plant.

Measures are developed for reducing the list of products and the norms for the expenditure of spare parts. These envision increasing the durability of the elements of agricultural machines and the development and refinements of normatives for the consumption of spare parts.

As a result of the measures taken in 1982 (improvement of the quality of repair during the restoration period, reduction of idle time for repair during the harvest period, rendering of practical assistance in adjustment, the availability of a reserve supply of spare parts, seminars for studying the device, and adjustment and technical servicing of the machines), the coefficient of readiness increased--for the RKS-6 root-harvesting self-propelled machines--by 2 percent, the RKS-4--by 1 percent, and the SPS-4.2 self-propelled sugar beet loader--by 1 percent.

We also provide supervision of the storage of the equipment. As our observations show, about 85 percent of the machines are stored without observing the rules for storage. Therefore we attach great significance to our supervision, performing this work in conjunction with the state agency for technical supervision and Sel'khoztekhnika, being guided by the GOST "Rules for Storing Machines." Since our machines operate for no more than 2 months a year, it is especially important to take care of them, and to coat them with anticorrosion grease before storage. And we do not simply register the shortcomings, but also discuss what needs to be done in order to prevent them. And I must note that the situation is changing for the better, albeit slowly. The expenditure of spare parts is decreasing from year to year.

This work is impeded by the lack of opportunity for real influence on the consumer. Previously the minister had an order in effect whereby when a kolkhoz or sovkhoz violated the rules for operation of a machine it was possible to withdraw their guarantee. There are now instructions which forbid us to do this. These machines can only be put on the report. I think that this is an unjustified step.

After the managers of the support bases returned to the plant, we systematize all of the information and send it to the state special design bureau. Then we convene the plant's technical council, at which the materials we have submitted are considered and a program of action is earmarked to eliminate the shortcomings. It is coordinated with the USSR Goskomsel'khoztekhnika, and after this it is approved for mandatory implementation. Even a simple list of work performed by the division shows its great importance, above all to the consumer. We are convinced of this by our contacts with the consumer over more than 5 years. Of course, the forms of cooperation and partnership can

change with time. But the effect from direct contact with the consumer cannot be lost!

#### Consumer Evaluates the Work of Support Bases

Participating in the harvest of the sugar beet crop in Krasnodar Kray were 249 guaranteed RKS-6B machines and 94 SPS-4.2 loaders. In August representatives of the plant conducted four zonal seminars with machine operators and specialists of the farms in order to study the devices and rules for operation and regulation of the machines.

A. P. Shermet, Chief of the Kray Sel'khoztekhnika Administration

The management of the oblast Sel'khoztekhnika is giving a positive response concerning the work of the support base of the Dnepropetrovsk combine plant and asking that it be retained in Ternopol Oblast.

A. V. Dyachenko, Deputy Chairman of the Oblast Sel'khoztekhnika

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CSO: 1820/31

PLANNING, ECONOMICS ADMINISTRATION CHIEF INTERVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 71-84

[Interview with S. S. Yuzesovich, chief of the Planning and Economics Administration of the Ukrainian SSR Ministry of the Food Industry, by Ye. L. Lysaya: "Taking Into Account the Specific Features of the Branch"]

[Text] On the scale of the country's food industry the UkSSR Ministry of the Food Industry occupies an eminent place: the proportion of commercial products produced by its enterprises amounts to 20 percent, and sugar production--more than 55 percent, vegetable oil--24 percent, and canned fruits and vegetables--more than 40 percent.

The UkSSR Ministry of the Food Industry includes 26 subbranches which join together 84 production (production-agrarian) associations, 25 food industry administrations under obispolkoms with the rights of production associations, 12 combines and 138 independent enterprises. If one takes all this into account one can understand why the UkSSR Ministry of the Food Industry is representing the Food Industry in the large-scale economic experiment for expanding the rights and increasing the responsibility of production associations and enterprises.

[Question] Stanislav Semenovich, we know the general principles for the economic experiment. They were presented in the corresponding decree of the CPSU Central Committee and the USSR Council of Ministers, and they have been published repeatedly in the press. But how have the specific branch features been taken into account, or have they?

[Answer] I see one of the great merits in the experiment that is currently being conducted in the fact that it pays attention to the peculiarities of the branches. While previously in the majority of cases when measures were conducted for improving the economic mechanism general methodological guidelines and instructions were created, which were based mainly on the

experience of management of machine-building enterprises, in the new experiment the specific conditions of the production and activity of the branches are taken into account, which creates more favorable possibilities of improving the economic mechanism.

Take the food industry. Many of its subbranches engage in the processing of agricultural raw material--sugar beets, sunflowers, potatoes, vegetables and so forth. Any deviations from the plan for the procurements of agricultural raw material exert a great influence on the results of the activity of our enterprises and associations. And this is reflected not only in the quantity of the raw material that is received, but also on its quality--the sugar content of the beets, the oil content of the sunflowers, and so forth.

The enterprises participating in the experiment have been given greater rights to develop the Food Program, and the number of indicators established "from above" has been reduced. Being relieved of the trivia from the higher agencies in and of itself should have a favorable effect, since with expansion of independence in planning it is easier to balance the production capability with the raw material and processed material resources. In addition to this the USSR Ministry of the Food Industry has been granted the right, with the agreement of the USSR Gosplan, to make changes in the plans of the enterprises that process agricultural raw material, depending on the results of the procurements. When speaking of adjustments I have in mind not only a reduction, but also an increase in the volumes, which is possible when the results of the procurements of raw material are favorable.

Not only the physical and value indicators, but also the plan for profit and payments into the budget are adjusted. For in keeping with the conditions of the experiment, it is more advantageous for the enterprises and associations to adopt difficult plans than it is to significantly overfulfill easier plans. Thus for each percentage point of growth of profit envisioned in the plan as compared to the base period--1983--the material incentive fund is increased by 1 percent, and for each percentage point of overfulfillment of the profit plan--it is increased by only 0.7 percent. With overfulfillment of the plan for profit by more than 10 percent, the normative decreases even more.

Previously, because of the reduction of the procurements of raw material in years with unfavorable climatic conditions, the enterprises ended up in a difficult financial position. Now this influence has decreased appreciably. Thus in 1983 the republic's oil and fat industry, because of the crop failure, failed to harvest enough raw materials and its production volumes dropped in the first half of 1984. Under the previous conditions it would have sustained large losses in its material incentive fund. According to the conditions of the experiment, if the reduction of the production volumes and, consequently, the profit has not been the fault of the enterprises, the material incentive fund can remain at the level of the base year. But if there has been a shortage in circulating capital as a result of the shortage of profit because of these reasons, the USSR Gosbank institutions do not apply credit sanctions before this shortage of circulating capital is reimbursed by the higher organization.

Or take the fluctuations in the demand for the items which, in certain subbranches of the food industry, are extremely significant. Even previously the plan was established for bakeries depending on the demand. In the experiment we have extended planning according to demand to the pasta industry and enterprises of the oblast food industry enterprises.

When it is necessary to process perishable raw material or when there is a sharp increase in the demand for particular items (for example, for special holiday pastries) the work schedule at the enterprises can be changed. This is also a very important possibility. Not all enterprises and branches can be treated the same. Each one has its own peculiarities. And if food industry workers lose products during the season of mass processing simply because they are not permitted to change over to a continuous work schedule or to work longer shifts, then it is impossible to make up for what has been lost. Subsequently, when the seasonal load drops, the administration will be able to compensate the workers for their days off. In my opinion, the specific features of the branch should also be taken into account when all branches change over to the new conditions for management.

[Question] In the experiment they have taken a course toward having fewer indicators that are approved by the higher level and more of those that are developed by the enterprises themselves. How is this principle being realized under your conditions?

[Answer] Previously the enterprises and associations were given 25 indicators in the annual plan and 14 in the five-year plan. The figures are now 9 and 8, respectively, and some of them have become calculation figures while others have become less detailed. The funds for wages and economic incentives are formed on the basis of normatives. The normative principle for the formation of funds motivates the labor collectives to achieve high final results. Thus previously the absolute amount of the wage fund was established for the enterprises (associations). Now we determine the overall amount of this fund only for enterprises that are just being put into operation, and for the rest of them we determine only the wage fund for nonindustrial personnel and workers who are not officially a part of the staff. The enterprises or association forms the entire wage fund for industrial production personnel itself, on the basis of normatives and depending upon the increase in the commodity or normative net output (NChP). As you can see, we have two indicators in effect for calculating the normatives. And this is no accident. Take the confectionery factory. The same number of people can be employed on the technological lines for manufacturing caramels and chocolates, but the volumes of commercial output will be different since the price of chocolate is much higher. Therefore at such enterprises, in order to calculate the wage fund, it is expedient to use normatives from the NChP, which reflect that actual labor contribution of the collective. The normative from the NChP is also calculated in the bread-baking industry. At enterprises of other branches the wage fund is formed on the basis of the increase in the commodity output.

Now the plan for producing products is approved for the enterprises in a consolidated products list. Why a consolidated one and not a complete one? Because rigid regulation of the assortment of items by the higher levels was a

serious impediment in the work. The enterprises had to fulfill planning assignments for all kinds of products, regardless of how the consumers felt about them. Surpluses were created for certain items while the demand was not satisfied for others. For it was not always clear to the ministry and the republic industrial association what products were in great demand locally. Now we plan a consolidated products list for the enterprises and associations, for the various groups of products, but the complete assortment is determined by agreements which are concluded between the enterprises and the trade organizations.

The fulfillment of the plan for product sales taking into account deliveries under agreements and orders, under the conditions of the experiment, is the main evaluating and fund-forming indicator. Therefore the enterprise has been placed in economic conditions whereby it must produce and deliver all kinds of products included in the agreements and orders. In forming the material incentive fund for this indicator we have the same ratios as they have in other branches which are conducting the experiment: 15 percent of the deductions for the base fund, with 100-percent fulfillment of contractual commitments; for each percentage of underfulfillment of deliveries the fund is reduced by 3 percent.

The number of industrial production personnel is determined by the enterprises themselves on the basis of established indicators, and it is coordinated with territorial planning agencies since one cannot fail to take into account the availability of labor resources in one region or another.

Certain workers of our ministry have expressed a fear: "But what if suddenly the enterprises, taking advantage of the rights that have been granted to them, increase the number of personnel?" This is a justified fear. In the experiment economic conditions have been created whereby the enterprises are motivated to save on the wage fund, and not redistribute it, since as a result of the savings they are permitted to pay additional wages for high qualifications to workers of categories IV-VI in the amount of 16-24 percent of their wage rates, and the salaries of workers who are employed in especially important or responsible sections can be increased by an amount of up to 230 rubles a month; and there are also additional payments for combining occupations which are paid to workers in various personnel categories, and the list of occupations to be combined is not established by the higher organizations. It is also permitted to use all the savings, and not just 1 percent as was previously the case. From the savings on the wage fund for engineering and technical personnel the employees can now receive increments to their salary in an amount of up to 50 percent. To do this it is not necessary to make additional limit allocations for maintaining the administrative staff. Naturally, the enterprise has no reason to increase the number of personnel. In order to obtain savings on the wage fund, it is interested either in reducing the number of personnel or producing more products with the same number of personnel, that is, increasing labor productivity. Of course there are cases in which the enterprise needs an additional number of workers, for example, when it is considerably expanding some particular production or when there has been a marked increase in wages, for instance, during the assimilation of new products or increased output of new, more colorful items in small packages. And this is a justified increase

in the number of personnel. This will not increase the overall number of workers registered at the enterprise.

[Question] The enterprises of certain branches that are participating in the experiment refer to the fact that, as before, they are given instructions about reducing the number of administrative and management personnel, which creates impediments in the placement of personnel and in the utilization of the savings on the wage fund. Does this problem exist at your enterprises?

[Answer] Of course, all unjustified limitations and intervention from outside violate the purity of the experiment and its effectiveness, but I emphasize--unsubstantiated. Therefore we try to avoid this. So far we have managed to rid the enterprises of any intervention during the course of the experiment.

[Question] How significant are the changes in the policy for forming profit and accounts with the state budget?

[Answer] In my opinion, positive changes have taken place here too. Previously the portion of deductions into the budget from planned and above-plan profit were always different. Now a unified normative has been established for deductions from profit into the budget. When distributing profit they also take into account the specific features of enterprises of various subbranches. Thus for enterprises that process agricultural raw material and those of the bread-baking and local food industry they do not establish payments for funds since the level of utilization of production capital changes, depending on the quantity and quality of raw material that comes in. Whether there is a harvest of sugar beets or not, whether the sugar content is high or low--these are the main things that determine the work of sugar refineries. In the bread-baking industry the level of the utilization of fixed production capital changes depending on the demand for the products. But this does not mean that the production capital of enterprises of these subbranches is used free of charge. They are assigned a higher normative of deductions from balance profit into the budget.

During the course of the experiment it became clear that the established policy for deductions from profit into the budget was not equally acceptable for all branches. As the work experience in the first half of 1984 showed, in branches with a high level of profitability (confectionery, oil and fat, alcohol, liquor and vodka and so forth) where the normative deduction from profit into the budget are very high, the proportion of profit remaining at the disposal of the enterprises does not provide for the necessary deductions into the material incentive fund for the proportion of high-quality products, or the creation of a financial reserve and other deductions that are envisioned by the conditions of the experiment.

It would apparently be expedient to establish a policy whereby the deductions into the budget from above-plan profit do not exceed 25 percent when the plan for profit is overfulfilled by up to 3 percent, and 75 percent when the plan for profit is overfulfilled by more than 3 percent.

[Question] How does the food industry stimulate the output of high-quality products? After all, everything that goes to satisfy the needs of the workers should be of high quality.

[Answer] We still have work to do on the criteria for quality indicators because, actually, all products produced by the food industry should meet the established standards and be of high quality. In addition to their taste properties, the external appearance and packaging influence the evaluation of the products. What do you suppose an attractive wrapping or box means for a piece of candy? It is important for it to taste good! Nonetheless, there is a shortage of candy in boxes, but there is no demand for it if it is poorly wrapped or is not wrapped at all. Even bakery items that are packaged and wrapped are sold more quickly than those which are offered in the usual form.

It is necessary to work more on the presentation and to spend more money on this. These expenditures should be compensated for. Or, for instance, the creation of items with new taste properties. Our Lvov Svetoch Confectionery Association as a very interesting operation. Its assortment always has many new items, and the candy tastes good and is presented in an original way.

For example, the cake in a box which is wrapped with ribbon is included among products of the high quality category, according to instructions that are in effect in all republic food industry ministries, while the one that does not have a ribbon is not included in this category. Or, for instance, all of the various kinds of rolls are considered to be high-quality products, although some of those included among them, in terms of their taste and how hard they are, are more like shoe leather than like rolls. During the course of the experiment it will be necessary to develop better-justified criteria for quality.

[Question] It is too early to sum up the results, but 6 months have passed already. I should like to know how the new economic levers are "working."

[Answer] Including the indicator of deliveries among the fund-forming indicators considerably increased the responsibility of the enterprises to the consumers. The delivery plan in the various branches was fulfilled by 100 percent. Labor productivity amounted to 106 percent as compared to the corresponding period of last year (102.9 percent as compared to the plan), and the proportion of high-quality products increased by 18.8 percent instead of 15.7 percent, as called for by the plan, and the assignment for profit was overfulfilled.

But still it seems to us that it is not a simple matter to regularly fulfill deliveries (at least in our branch) by 100 percent. It is apparently still necessary to give some sort of "push" after 99 percent, to stimulate not only 100 percent fulfillment of deliveries, but also to come as close as possible to it. It is known that fulfillment of delivery commitments does not depend completely on the production itself. Yet all one has to do is fail to fulfill contractual commitments by tenths or hundredths of a percentage point and the enterprises is deprived of 15 percent of the addition to the material incentive fund. And this harms the morale of the collective.

[Question] Tell us, please, about the formation and utilization of the other economic incentive funds.

[Answer] Our rights to utilize the fund for the development of production have been expanded significantly. They are now at the disposal of the enterprises themselves. Previously a large part of the money from this fund was taken away from them.

It is important to note this aspect as well. Previously all of the planning documentation for expansion of production and technical re-equipment had to be coordinated with the leading planning institutes. This took years. And it was necessary to coordinate any trivia. It is one thing when there is a radical reconstruction, and another thing when it is simply a replacement of individual kinds of outdated equipment. Now the enterprise has been given the right to fulfill the planning documentation through its own forces or to order it from the outside and to conduct work for technical re-equipment without coordinating it with the planning organizations. This right is especially significant now since 57 percent of the overall volume of capital investments in the branch go for technical re-equipment. Previously this figure was 44 percent.

There are no especially large enterprises in the food industry. The funds for the development of production, naturally, are small. Therefore it is especially important that, in keeping with the experiment, they be given the right to accumulate money so that later they will have the necessary amount to perform large jobs for reconstruction. Moreover, now the enterprise can take out a 6-year loan for these purposes and repay it from the fund of the development of production.

Unfortunately, contracting construction organizations do not want to take on small construction projects. Therefore about 50 percent of the work for construction and reconstruction in the branch is performed through the efforts of the enterprises themselves. To be sure, funds are now being allotted for construction materials for this work from the fund for the development of production while previously material resources were allotted only with the utilization of centralized capital investments. But we do not have enough construction mechanisms, the construction base is inadequate, and it cannot be strong in nonspecialized branches. If contracting organizations will not take orders for the construction of small projects which are financed through the fund for the development of production, I think that it will be difficult to utilize this fund effectively.

The fund for social and cultural measures and housing construction, according to the conditions of the experiment, is calculated on the basis of the base fund and the increase according to the normative for the increase in profit envisioned by the plan, and during the process of the fulfillment of the annual plan it is increased or decreased, depending on the fulfillment of the profit plan. The main thing is that the economic incentive funds for the enterprise are not allotted by the branch as had been the case in past years, but are formed by the enterprises themselves on the basis of normatives and according to the results of the work.

[Question] During the course of the experiment have you observed changes in the interactions with the suppliers of raw material, trade, transportation enterprises and material and technical supply organizations?

[Answer] Since all sanctions for shortages in deliveries and for tardy dispatching of products involve only participants in the experiment, the economic responsibility of our partners in production and sales has not increased. It will increase when their main evaluating indicator is sales, taking into account deliveries under agreements that have been included, or the fulfillment of orders by the consumers. We are speaking about Gosnab and transportation agencies. Without their participation it is impossible to fully solve the problem of increasing the effectiveness of production. The economic mechanism should be improved comprehensively, as a unified whole. Raw material branches and transportation should be enlisted in this work so as to solve the problem of adjusting the economic mechanism at the junctures of the extraction and processing branches.

But still certain positive changes have been noted in the interrelations among the partners because of the administrative measures that have been taken. There are joint orders of the USSR Ministry of Railways and the UkrSSR Ministry of the Food Industry, the republic Ministry of Trade and our ministry, concerning mandatory conditions for cooperation during the period of the experiment. Their observance is monitored by the commission of the Ukrainian SSR Council of Ministers for coordinating the activity of the ministries and departments of the republics that are participating in the experiment.

Under the conditions of the experiment there is one very important provision which is related to product sales. If during the course of the month trade organizations do not gather up the products intended for them according to the funds, the enterprises have been given the right to sell them at their own discretion to other purchasers--the system of consumers' cooperatives and other union republics. And these volumes of products are included in the fulfillment of the plan for deliveries.

[Question] The fate of the experiment is being decided mainly at the enterprises and associations. Do all the people who are involved locally know about the economic conditions of the experiment? How are the collectives being prepared for the new methods of management?

[Answer] Any indicators and proportions, regardless of how clearly they may have been developed, will produce nothing unless all participants in the experiment are informed of them. For the experiment has touched upon everyone at the level of responsibility which he bears for the work entrusted to him. The ministry has organized the training of more than 5,000 people with leave from production. These include managers of enterprises, head engineers, chiefs of planning-finance and legal divisions, and divisions for organization of labor and sales. They have attended a cycle of lectures in departments and in courses of the branch institution for increasing qualifications. The training has also been conducted locally, without leave from production. Many enterprises have decorated very visibly and expressively the stands which are devoted to the experiment, having depicted on them the established indicators,

normatives, conditions for the formation of economic incentive funds, and so forth.

The problem of labor resources is important to everyone. Therefore many enterprises have concretely thought about the policy for combining occupations which are necessary to production. At the Salivonkov sugar refinery of the Kiev agroindustrial association of the sugar industry, at the Belotserkov plant for nonalcoholic beverages, at the Confectionery Factory imeni Karl Marx in Kiev and many other enterprises I have seen in the shops posters which indicate concretely which combinations of occupations are necessary to the enterprise and the ones for which one can receive an additional payment. In the shops they have posted tables which show what produces savings on wages and raw material resources.

The experiment will show the competence of the production managers. Now each of them must think and delve into the economy. The concept of fulfilling the plan at any price will no longer do--because of this the enterprise could end up in a very difficult position. The problem of management personnel has become more critical. The ministry will have to pay more attention to the level of knowledge of the management staff of the enterprises.

[Question] And how did the experiment affect the work of the central staff of the ministry and the republic industrial associations?

[Answer] When preparing the economic experiment, the work of the staff of the ministry and industrial associations increased considerably in volume and became more complicated. Branch management specialists had to delve deeply into the essence of the economic categories and develop various variants of indicators with respect to the peculiarities of each subbranch. The level of their theoretical and practical knowledge rose, as a result of which they can render practical assistance to the enterprises.

The union agencies have introduced a system of bonuses for workers of the central staffs of ministry and industrial associations for the achievement of high final results by the branches under their jurisdiction.

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## GRAPHICS USED TO ILLUSTRATE EXPERIMENT

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Nov 84 pp 84-87

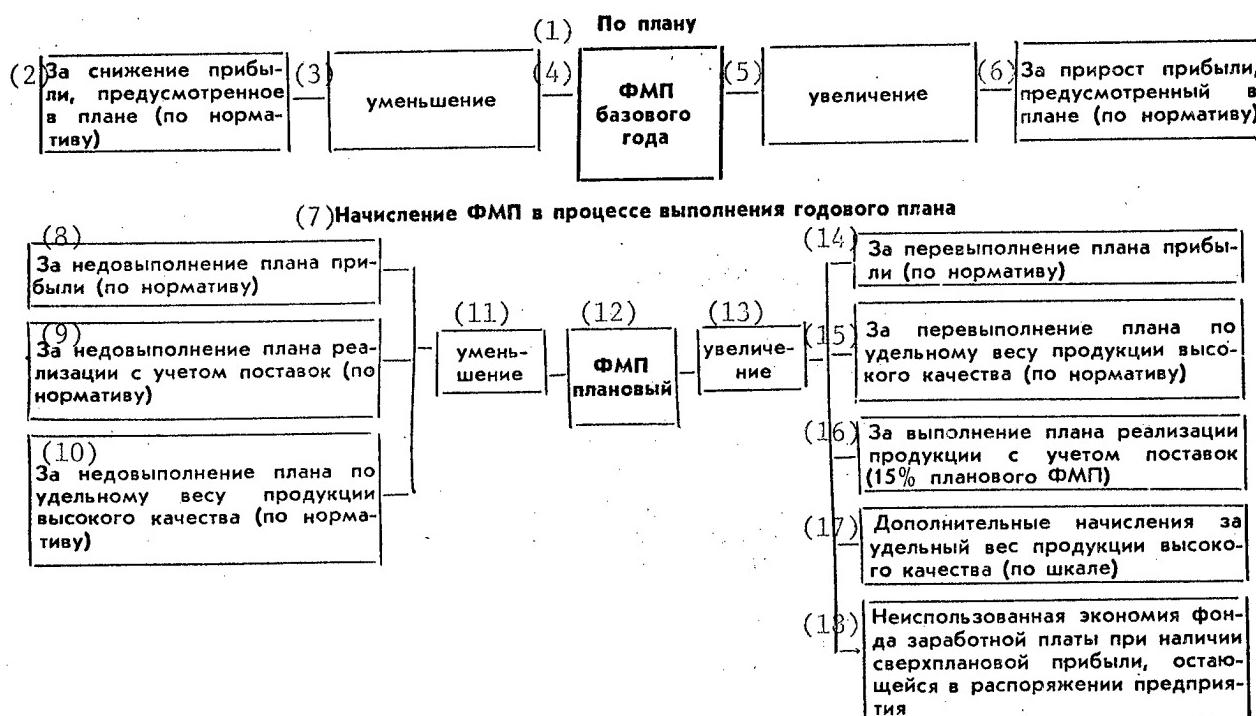
[Charts illustrating experiment of UkrSSR Ministry of Food Industry]

[Text] In preparation for the experiment, the UkrSSR Ministry of the Food Industry has published for its enterprises, in addition to official instructions, methodological guidelines and other normative documents, an album in which the main provisions of the experiment are illustrated with tables, charts and diagrams. Here are a couple of them.

Table. Indicators of the Evaluation of the Economic Activity of Production Associations (Enterprises)

Before Experiment	After Experiment
1. Volume of product sales	1. Volume of product sales based on commitments for deliveries in products list (assortment), quality and time periods, in keeping with concluded agreements (orders)
2. Growth of labor productivity	2. Proportion of products of the highest quality category in the overall volume of production of products
3. Fulfillment of plan in terms list of items	3. Increase in profit
4. Fulfillment of plan in terms of production cost	
5. Fulfillment of profit plan	
6. Fulfillment of plan for introduction of new technical equipment and advanced technology.	
7. Assimilation of production of new kinds of products.	
8. Fulfillment of plan for capital construction, including construction and installation work	

Table. Formation of Material Incentive Fund (FMP) Under Conditions of Experiment.



Key:

1. According to plan
2. For reduction of profit envisioned in plan (according to normative)
3. Reduction
4. FMP of base year
5. Increase
6. For increase in profit envisioned in plan (according to normative)
7. Deduction of FMP during process of fulfillment of annual plan
8. For underfulfillment of profit plan
9. For underfulfillment of sales plan, taking deliveries into account (normative)
10. For underfulfillment of plan for proportion of products of highest quality category (according to normative)
11. Reduction
12. Planned FMP
13. Increase
14. For overfulfillment of profit plan (according to normative)
15. For overfulfillment of plan for proportion of products of highest quality category
16. For fulfillment of sales plan, taking deliveries into account (15 % of planned FMP)
17. Additional deductions for proportion of products of highest quality category (according to scale)
18. Unutilized savings from wage fund when there is above-plan profit remaining at the disposal of the enterprise

Table.

## (1) Стимулирование высокопроизводительного труда и профессионального мастерства за счет экономии заработной платы

(2)	Рабочих	(3)	Инженерно-технических работников и служащих			
(4)	(5)	(6)	(7)			
<p>Занятых на особо ответственных работах — повышенные доплаты к тарифным ставкам за профессиональное мастерство (в % к тарифным ставкам):</p> <p>рабочим</p> <table> <tr><td>IV разряда — 16</td></tr> <tr><td>V " — 16</td></tr> <tr><td>VI " — 24</td></tr> </table>	IV разряда — 16	V " — 16	VI " — 24	<p>Занятых на особо важных и ответственных работах — оклады в размере до 230 рублей в месяц (но не выше должностных окладов мастеров с учетом 50-процентной надбавки)</p>	<p>Доплаты за совмещение профессий (должностей) работникам, относящимся к различным категориям персонала, без утверждения перечня совмещаемых профессий вышестоящими организациями</p>	<p>Надбавки до 50% должностных окладов с учетом личного вклада каждого работника в достижение высоких показателей работы, без ограничения указанных выплат предельными ассигнованиями</p>
IV разряда — 16						
V " — 16						
VI " — 24						

Key:

1. Incentives for highly productive labor and occupational mastery from savings on wages
2. Workers
3. Engineering and technical personnel and employees
4. Employed in especially responsible jobs--increased pay in addition to wage rates for occupational mastery (in % of wage rates):
  - for workers of category IV -- 16
  - category V -- 16
  - category VI -- 24
5. Employed in especially important and responsible jobs--salaries in amount of up to 230 rubles per month (but not more than the salaries of foremen taking into account the 50-percent increment)
6. Additional payments for combining occupations (positions) for workers included in various categories of personnel, without the establishment by higher organizations of a list of combined occupations
7. Increments of up to 50 percent to salaries, taking into account the personal contribution of each worker to the achievement of high indicators of work, without limiting these payments by maximum allocations.

Table.

NORMATIVES FOR FORMATION OF MATERIAL  
INCENTIVE FUND UNDER  
CONDITIONS OF EXPERIMENT, %

1. For increase in profit envisioned in plan as compared to base year

For each percentage point of increase in profit  
in percentages of planned FMP of base year.

Up to 10 %	1.0
10-15 %	0.7
More than 15 %	0.5

2. For overfulfillment (underfulfillment) of profit plan

	Increase for overfulfillment	Reduction for underfulfillment
Up to 10 %	0.7	1.3
10-15 %	0.49	0.91
More than 15 %	0.35	0.65

3. For overfulfillment (underfulfillment) by 1 point in terms of proportion of products of the highest quality category it is increased (reduced) by 1 percent of the planned material incentive fund.

4. For each percentage point of underfulfillment of the sales plan taking delivery commitments into account, the material incentive fund is reduced by 3 % (but not more than 25 % of the planned amount of the fund for branches that process agricultural raw material).

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## FIRST RESULTS OF EXPERIMENT REPORTED

Novosibirsk EKONOMIKA I ORGANIZATSIIA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 87-89

[Article by F. M. Agranovich, chief of the planning and economics division of the bread roll and confectionery combine (Kiev): "The First Results Inspire Hope"]

[Text] Our combine specializes in the output of small bread roll items, and also tarts, pies and cakes. We produce 22 kinds of tarts and our confectioners have developed the recipes for 20 of them. We have a monopoly in Kiev on barankas and diabetic bread roll items.

Like other enterprises that produce bakery items, we do not have a stable monthly delivery plan. We work according to one-time orders from trade. And our trade partners have the right to cancel their orders up to 2 hours before the products are delivered to the stores. Therefore our main fund-forming indicators are the fulfillment of the plan for profit and product quality.

Under the new conditions of management, it is advantageous for the enterprises to achieve a savings on the wage fund. When we explained to the brigades the conditions for the experiment the workers made their own suggestions regarding expanding the service zones and combining occupations. Because of following these suggestions we should be able to save 15,000 rubles a year on the wage fund. The first quarter showed that this figure is quite realistic: during January-March the savings amounted to 4,000 rubles. Of these 1,500 rubles were used for wage increments for skilled workers and for combining professions. And although the provision of personnel for the combine is not altogether good, we are not experiencing any difficulties because of a shortage of personnel. The ovens and the bread-baking lines operate according to a sliding continuous schedule. The combine will deal with this situation by expanding the service zones and combining the occupations of the permanent personnel. Young people and newcomers do not like this working schedule. But after they have been working here for several years and become permanent bread bakers they are willing to work in these sections as well. This is why it is so important for us to take advantage of the right granted by the experiment to economize on the wage fund for increments and additional payment.

During the course of the experiment there was a marked improvement in material and technical supply. Previously there had always been difficulties with raw materials, and therefore in the order for 1984 we insured ourselves--we

ordered various kinds of raw material and unexpectedly received everything we had ordered. And they had never allotted so much metal for repair needs before either. Everyone understands why we had to overinsure ourselves: the responsibility for the final results of production and economic activity increased considerably under the conditions of the experiment. And every enterprise strives to make sure that it has no impediments to fulfilling the assignment.

Both in material and technical supply and in planning normatives the guarantee of stability is an important condition for improvement of the economic mechanism. If everyone were convinced that the needs for raw and processed materials would be fully satisfied, the national economy would achieve a significant savings on material resources which are now frozen in above-normative reserves.

We see great advantages in the new conditions for the formation and utilization of the fund for the development of production. Previously the sum of this fund at the combine did not exceed 28,000 rubles a year, regardless of the fact that the plan for profit was being fulfilled regularly. And even this amount was not always left at the disposal of the enterprise. In 1984, in keeping with the established normative for deductions from profit we received the full amount of the fund for development--2.5 times more. In the confectionery shop the technological line for producing Ekler pies broke down. Now the combine was able to order a new line valued at 40,000 rubles. We shall gradually update other obsolete and worn-out equipment. Of extreme importance is the right has been granted to accumulate funds for the development of production from year to year as well as the right to take out bank credit for technical re-equipment and to pay it back gradually from this fund.

The fund for the development of production will continue to grow in the future, but there is the danger that we will not be able to utilize it since machine building is poorly providing the bread and confectionery industry with equipment. We need to replace all technological lines for producing bread roll items--the forming machines and dough mixers are completely worn out and we cannot acquire new ones.

The new conditions for management have had a positive effect on the results of the enterprise's activity. During the first half of 1984 the assignment for producing high-quality items was fulfilled by 107.6 percent, and for the sale of products--by 101.7 percent. Labor productivity increased by 5.7 percent and amounted to 107.9 percent as compared to the corresponding period of last year. The plan for profits was fulfilled by 111.6 percent. As a result of the savings on the wage fund during the first half of the year, in the second

half of the year 25 more workers will receive increments to their wages for expanding their zones of service, combining their occupations and acquiring occupational mastery.

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## IMPROVEMENT OF PLANNING WORKS CALLED FOR

Novosibirsk EKONOMIKA I ORGANIZATSIIA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 90-104

[Article by B. M. Smekhov, doctor of economic sciences, Institute of Economics of the USSR Academy of Sciences (Moscow): "The Logic of Planning" and a discussion]

[Text] In spite of certain achievements in our planning and the in-depth development of its methodology which is based on the utilization of economic laws of socialism, we cannot consider it to be perfect. One frequently encounters cases of unbalanced plans, inadequate substantiation of many planning assignments, inadmissible adjustments, and so forth.

One of the reasons for this, in our opinion, is that in the theory and practice of planning we have not yet found the sequence of changing over from actual and predicted data to the target assignments which would provide for

the most effective planning decisions. The differences in the approaches to solving a whole number of methodologically important problems impede the development of such a sequence of planning calculations.

Various viewpoints on one and the same object usually spring from different initial tenets. But this is not immediately clear. Let us give the simplest example. In order for a cat to be clean one must wash it. This would seem to be logical. But Bernard Shaw advised: do not wash a cat or else it will never wash itself; it is better to pour dirt on it from a bucket, and it will immediately begin to lick itself so zealously that it will be cleaner than it was before. That is also logical! But not enough people are concerned about making sure that the cat retains its ability for "self-service," and B. Shaw considered this important. Different initial positions, and different logically accepted solutions.

It is necessary first of all to stipulate the initial preconditions. And they depend on the peculiarities of the object to which the laws of logic are being applied.

## Does Planning Have Its Own Logic?

What is the peculiarity of the logic of planning? As distinct from other branches of general logic, this is a logic of purposive actions. This distinguishes it, in particular, from the logic of prognostication which, like planning, deals with future events. But planning and prognostication have different tasks. Prognostication means to recognize what can happen. Planning means to recognize what should be done. Here, as distinct from prognostication, it is necessary to set goals, which is predetermined by the very essence of planning.

One cannot get away with substituting prognostication for planning: this removes the responsibility from the planner. One can always find a reason why the economic "weather" turned out to be different than was predicted. But can planners be like those diplomats who are praised for their ability to predict what will happen tomorrow and then explain why it did not happen?

The second distinguishing feature of planning as an object of logic consists in that it determines one purposive action or another during the course of a completely limited period of time.

And, finally, the third feature of planning is related to its directive nature. During the process of planning one can and should utilize and take into account the data from prognoses, expert evaluations, planning of the performers of the work, the effectiveness of the existing norms and rules, and so forth. In the USSR the main result of planning are the directive planning assignments which are directed to specific performers of work.

And so the expediency within the limits of a particular period and the directive nature ascribe a special character to the logic of our planning. Let us try to pin down the main contours of this branch of logic.

### Axioms of the Logic of Planning

The logical construction of the theory of planning presupposes the application of the axiomatic method--a system of axioms which make it possible to determine deductively the conclusions that correspond to the economic laws of socialism.

In his speech before the electorate on 2 March 1984, General Secretary of the CPSU Central Committee K. U. Chernenko noted: "The final goal of all of our work is improvement of the life of the Soviet people." Therefore one should first of all define the concept of the demands of the population, since socialist planning is devoted to the satisfaction of these.

The effective demand that is planned for a particular period is subject to complete satisfaction. With respect to goods and paid services this is the planned effective demand. And if one turns to abstraction from the planning period, one should also speak about the absolute demands, as K. Marx called them.<sup>1</sup> Let us recall that the absolute demands of the population do not depend on the possibilities of their satisfaction in one period or another.

From the standpoint of the logic of planning it is very important for the needs that are to be satisfied in a given period to be amounts that depend on planning decisions, while the absolute demands do not depend on these. The latter can and should be determined autonomously, not in the planning of the national economy, but as a special task of searching for "rational norms" and other similar indicators.

The following provisions which are fundamental for the logic of planning the national economy seem axiomatically clear to us.

A-1. The goal of the plan is conditioned by the goal of socialism and consists in providing in the planned period for the maximum possible improvement of public well-being with the given objective limitations (see A-5).

A-2. The level of public well-being in the planned period is characterized not only by the number, but by the complex of levels of satisfaction of the needs of the population for various material goods and services during the course of this period.

A-3. The absolute needs of the population are constantly developing, but for each planning period they are objectively given within the limits of the required precision for planning calculations and should be established autonomously.

A-4. The required precision in the planning calculation is determined by such amounts as are essential for public well-being. The limits of precision of the calculations which do not directly affect the standard of living (for example, planning the production of means of production) are determined in terms of their influence on the indicators of public well-being through the system of interbranch ties. In practice, it seems to me, in long-range plans it is sufficient to determine the indicators of public well-being with a precision of up to 1 percent.<sup>2</sup>

A-5. The maximum possible improvement in public well-being according to the complex of indicators A-2 in the planned period has objective limitations in terms of the following resources and needs which must be determined autonomously:

material resources existing at the beginning of the planned period (means of labor, supplies of objects of labor, objects of consumption and natural resources);

labor resources in the planned period;

general state needs for resources dictated by the commitments that are made under agreements with other countries, defense requirements and tasks for environmental protection;

needs related to the accumulation of resources for satisfying the demands for the period following the planning period;

needs for reserves for localizing the consequences of natural disasters and deviations of the actual development from the planned development.

A-6. All planning assignments are unknown quantities and because of their interdependence they cannot be determined in isolation from one another (the principle of the comprehensiveness of planning), with the exception of the limitations listed in A-5, which can be determined only autonomously. It should be especially noted that the aggregated and average amounts are derived from broken down and detailed assignments, and therefore can be determined only on the basis of the latter.

A-7. Certain normative amounts and a composition of applied means of labor, proportional expenditures of objects of labor, energy and working time correspond to each production technology of one or another product or service.

A-8. Material goods and services for various purposes are incommensurable in terms of their usefulness or consumer value, and this means that they are not interchangeable either.

Let us note at once that in a number of works on optimal planning the basis is the opposite axiom, namely: all consumer values are commensurable. But this clearly does not approach the rank of an axiom. Even in the first lines of "Das Kapital" K. Marx, without justifying it, assumes as an initial and obvious point that goods as consumer values are incommensurable. Subsequently we turn to axiom A-8 in connection with the question of the special-purpose function of optimal planning.

A-9. In order to provide for balance of the national economy, it is necessary:

- a) in the event of underfulfillment of planning assignments by significant amounts, which exceed the limits of precision according to A-4, or in the event of the discovery of individual cases of lack of correspondence in the plan itself within these same limits--to localize the consequences of these negative phenomena either with the help of reserves (one of the limitations of A-5) or through refining the planning assignments, normatives, prices and system of economic stimulation;
- b) in the event of overfulfillment of planning assignments in considerable amounts--to adjust interbranch and interrayon ties in those amounts in which overfulfillment of planning assignments affects them.

The axioms that have been formulated, in our opinion, make it possible to distinguish the logical from the illogical in planning. Let us consider these possibilities with respect to certain important methodological problems of planning the national economy.

#### Information Supply for National Economic Planning

The basis of the intensification of public production is scientific and technical progress. Its economic results are reflected in those changes in the capital-, energy-, material- and labor-intensiveness of products (FMT)

which in their totality lead through a reduction of the cost of products to an expansion of the possibilities of improving public well-being (A-1 and A-7).

How is this planned in practice?

The balance national economic calculations make it possible to coordinate the planned changes in the branch and territorial structure of the national economy with the changes in the technological structure of the production of products of each branch. A great deal of positive experience has been accumulated in this area. But changes in the technological structure of production are of a deliberately interbranch nature. They are determined mainly at the branch level. The drafts of plans that are submitted to the Gosplan already include the changes projected by individual ministries in the proportions of various technologies in the production of products. It is impossible to subordinate these changes to the final goal of the development of all of public production at the branch level. Thus the initial points of the logic of planning, expressed in A-6 and A-7, are violated.

It is not logical to plan and distribute capital investments among the various branches and rayons on the basis of general balance estimates--before the most effective proportions of economic development are determined. It is impossible this way to select the best variant of the distribution of capital investments from the standpoint of the system of concrete final needs of the society, to whose satisfaction planning is subordinated. All this contradicts A-1, A-2, A-3 and A-6.

But, perhaps, it is a lack of the necessary information that impels us to all these violations of the logic of planning?

Inertia in thinking is strong here. It seems impossible to refrain from "global" estimates as initial ones and to proceed not from aggregated amounts to detailed ones, but vice versa. Still there is a real possibility of radically restructuring the information support for long-range planning. The initial information should be information only about the possible variants of the production technology (including both existing and planned) and about differences in terms of FMT. There are many of these variants for long-range planning. There is information about them in developments of branch scientific research and planning institutes. The formation of this information does not violate a single one of the aforementioned axioms. Moreover, on its basis it is possible to test comprehensively, from the standpoint of the goal of the plan (A-1) and taking into account the limitations that are determined autonomously (A-5), all of the various variants of the importance for various production technologies of all individual kinds of products (according to the products list of the plan).

Of course one can determine only a very limited of variants of the aforementioned degrees of significance using the old means of calculation and computation but even this would be an important step in providing for strict logic in planning. But we have electronic computers at our disposal and the necessary methods of mathematical programming have already been developed and approved.

Let us refer to some interesting calculations for determining, with the help of a computer, the optimal structure of the distribution of capital investments among several branches. They show that, in order to achieve the desired goals, one should increase the proportion of the production and nonproduction infrastructure in the overall volume of capital investments almost by half while reducing the proportion of funds sent directly to the business by one-third. For the usual approach (in keeping with the "importance" of the branch) this conclusion is unexpected and strange. But "it is possible to reveal the effect of the infrastructure only with a comprehensive approach, in which the effectiveness of individual subbranches is evaluated taking into account the final national economic or at least the interbranch effectiveness."<sup>3</sup>

#### Balance of Plans for Production and Capital Construction

Textbooks on planning the national economy and branch economies usually contain instructions to the effect that the production plan is substantiated, among other things, by balances of production capacities and measures for improving the utilization of the latter. But in the section for planning capital construction it says that capital investments are allotted for an increase in production capacities which provides for the planned production program.

The same "logic" for determining one unknown by means of another is contained in the "Methodological Instructions" of the USSR Gosplan (1980, pp 185-186, 389).

It is not enough that in and of itself such "logic" is not irreproachable since it has one equation with two unknowns. It is also quite inadequate from the standpoint of the modern day since, in the first place, it very remotely connects the plans for production and capital construction with the overall goal of the plan (contradiction between A-1 and A-2), in the second place, out of necessity it ignores the limits of precision of the calculations (contradicts A-4) and, in the third place, it violates the principle of comprehensiveness of planning (A-6).

In the event that it is possible (by the iterative method) basically to balance the plans for production and capital construction, there remains the major issue: what is the effectiveness of such a coordination from the standpoint of the goal of the plan? There is no guarantee that the most effective of all the possible variants for coordinating production and capital construction has been selected.

The lack of strict logic in the practice of coordinating plans for production and construction leads to the need to adjust the construction program during the course of it. This entails dispersion of capital investments among numerous objects. Hence the "drop" financing of construction projects and the prolongation of the time periods for their construction.

Because of this, as one can see from the testimonies of practical workers, "production capacities are created with strictly accounting for their purpose, under conditions in which much less is known about the products for whose

output the new enterprises are being constructed and many millions of rubles in capital investments are being assimilated than should be known during the preplanning stage, before the first investment measures are taken.

What are the ways of overcoming the violations in the logic of coordinating the development of production and capital construction?

Obviously, only comprehensive optimization calculations are capable of simultaneously determining the optimal intercoordinated assignments, from the standpoint of the goal of the plan, both for production and for increasing capacities in various branches of it, and with a concrete distribution of the increase in capacities among the various technologies. The means necessary for the development of capacities are also established simultaneously, and not in general, but with a distribution for the various material and substantial elements of the means of labor that are being created and reconstructed. The methods of including factors of reproduction of fixed capital in optimization calculations have been developed and approved.

#### Balance of Material-Substantial, Labor and Value Assignments of the Plan

In order not to complicate our argument let us assume that in the general expenditures of public labor for the production of products the ratio between expenditures of labor of various complexity are identical for all kinds of products. With such a presumption, the ratio among the values of various products can be expressed through the ratio of their complete labor-intensiveness.

What is the objectively necessary sequence for determining the material-substantial and value assignments of the plan?

Let us say that we have determined for the planning year the proportion of technologies and the proportions of production of the planned kinds of products. Thus we have given the average weighted socially necessary expenditures of specific kinds of means of production (including wear and tear of means of labor) and live labor per unit of each kind of product. From here there is one step to determining the ratio of values. In practice this sequence (which corresponds to A-6 and A-7, is reflected in the following: only after one has determined the material-substantial and labor proportions does one know the planning norms of expenditure and the changes in the production cost (still in old prices). This provides a basis for planning such changes in wholesale and retail prices, the system of wages, and so forth which provide for dynamic balance of incomes and expenditures of the state, the organizations and the population.

Now let us assume that in some way we had initially determined the ratio of the labor-intensiveness of the all kinds of products during the planned year. In this case we could say nothing about the proportions of production or about expenditures of concrete kinds of means of production and live labor.

In essence, we are coming up again against the requirements of A-6 here: the ratio of values is the ratio of average amounts produced from broken down and

detailed assignments in terms of proportional expenditures of means of production and live labor.

In planning practice requirement A-6 is met when the value assignments are formed on the basis of decisions that are made in terms of the material-substantial and labor assignments. But this does not spare us from shortcomings and mistakes in price setting, the differentiation of wages or the coordination of the effective demand with the supply since we are not meeting other requirements of the logic of planning. In particular, we do not have the necessary flexibility and maneuverability in improving the value normatives in order to step up the effect of the economic levers (see A-9).

Up to this point, for example, the system of value sanctions for shortages in deliveries is not effective enough. Frequently after reducing bonuses for failure to fulfill the plan for deliveries there are incentives for other indicators...

Certain economists see the solution to the problem in changing the sequence of development of material-labor and monetary-financial assignments. They present the matter as though the incomes and their distribution are predetermined and are initial factors for planning the production of goods and services. This approach clearly contracts A-6, especially when speaking about the long-range plan. Revenues and expenditures, prices and value normatives--all these, say, at the end of the 5-year period depend on the preceding changes in the system of material-substantial and labor ties. So in this case how can revenues and prices be initial factors for long-range planning of material production?

The subordination of value assignments and normatives to the task of stimulation and implementation of the plan for the production of material and spiritual goods corresponds to the internal logic of planning. This pertains particularly to the strictest observance of the socialist principle of distribution according to the quantity and quality of labor.

#### The Target Function of Optimal Planning of the National Economy

There is perhaps no other problem in the methodology of national economic planning which causes as much debate as the problem of optimal planning. In the heat of polemics a great deal that is superfluous is said, there is an inflation of words, and arguments end up in a stalemate. The arguments of the opposing sides seem equally strong, equally logical, and it is not clear how these disputes can be resolved. But with the closest possible consideration it turns out that the disputing parties are proceeding from diametrically opposed positions. These initial positions are taken as axiomatic without proof. And the entire problem, in our view, amounts to which of the initial positions corresponds to the essence of the axioms.

Some people take as axioms the fact that all consumer values and their social usefulness are commensurable. Others think that consumer values of various qualities are incommensurable in terms of their social usefulness (A-8).

Having accepted the first tenet as an axiom, they construct a model for the optimization of the national economic plan according to the criterion of the

maximum integral usefulness of the goods. The dual evaluation, naturally, is interpreted as an evaluation of the usefulness of goods. All conclusions regarding the fact that these evaluations are severed from the labor theory of value are easily swept away, since the limitation on labor is included in the system of limitations. Hence the far-fetched presumptions about the system of optimal prices and so forth. All this is logical if the initial axiom corresponds to reality.

The instance of the axiom, as V. I. Lenin defined it,<sup>5</sup> consists in that it contains a point which has been confirmed by practice a billion times and is therefore self-evident. The notion of the direct commensurability of goods in no way satisfies this requirement.

Frequently they turn to the argument of mediation of commensurability. Dual evaluations of the optimal plan reflect the following: if the evaluation of resource A is twice as great as the evaluation of resource B, it is natural to think that the unit A is twice as "useful" as the unit B for the amount of the target function. And if the latter reflects the goal of the society, the evaluations of A and B are the evaluations of their social usefulness. All this would be true if the target function could contain the coefficient of the usefulness of the goods. But for them it is necessary for these goods to be directly commensurable. Thus a recognition of the maximum of the integral usefulness as a target function is a recognition of the possibility of direct commensurability of goods of various qualities.

If one declares the evaluations of the optimal plan to be evaluations of the social usefulness of consumer values of various qualities, the vicious circle is inevitable: evaluations of the usefulness can be obtained as a result of solving the problem whose parameters include evaluations of the usefulness of goods which come from out of nowhere.

The majority of proponents of the criterion of the integral usefulness ignore this aspect of the matter. They have comfortably situated themselves within the vicious circle. But among them there are also those economists who try somehow to get out of it.

Quite typical in this respect is the position of S. S. Shatalin as expressed in his book.<sup>6</sup> The conclusions and judgments in it are very logical, but all of them rest on the axiom of the direct commensurability of the usefulness of goods. To the credit of the book's author, he does not make an attempt to find solutions in the vicious circle or by exchange direct commensurability of usefulness for some other kind. No, S. S. Shatalin solves the problem in another way. "Here," he writes, "...it is necessary to distinguish two circumstances: the very objective existence of social usefulness, which is confirmed by theoretical reasoning and the daily practice of socialist management, and the existence of effective methods and socioeconomic procedures which make it possible at the present time to compare the social usefulness of consumer values adequately enough" (p 54). Let us hope, he says, that at some time we will find coefficients of the usefulness of goods, and until then we shall recognize the existence of the category of social usefulness! But the recognition of this category certainly does not mean the

recognition of the possibility of direct commensurability of the usefulness of various goods.

Comparing and weighing the usefulness is always done according to the criteria of "better--worse." This indeed has been confirmed a billion times in practice. Therefore the objective essence of the comparison of the usefulness of goods of various qualities (reflected in A-1, A-2, A-3 and A-8) is correspondent only to a ranked scale of preferences of certain vectors of the indicators of well-being over others. Keeping in mind the required limits of precision of the long-range national economic plan A-4, it is sufficient to construct the ranked scale of preferences on the basis of an analysis of the structure of the consumption of various groups of the population and on the basis of the difference between the absolute needs and the levels of their satisfaction in the base year of the long-range period.<sup>7</sup>

But then what will the dual evaluations of the optimal plan mean? Only one thing: by that many divisions of the scale of the special-purpose function it is possible to move forward as a result of an additional unit of one resource or another (with the given system of limitations).

And so as an axiom one uses the commensurability of goods of various qualities and then the problem of optimal national economic planning becomes practically insoluble. Or one uses as an axiom the incommensurability of goods (A-8), and then optimal planning becomes possible in practice to the degree of the precision which is necessary (A-4). To be sure, from a purely theoretical point of view the first approach looks better because of its abstractness. But this is only an appearance.

In this article we have touched only on certain aspects of the logic of planning. The observance of strict logic in planning the national economy is an important and complicated task. It can be carried out more easily, in our opinion, if one stipulates initial axiomatically unquestionable provisions. They make it possible to select the sequence of planning calculations which corresponds to the essence of socialist planning and to extensively utilize modern computer equipment for optimization of the plans.

#### FOOTNOTES

1. Marx, K., Engels, F., "Soch." [Works], Vol 26, part II, p 23.
2. For more detail see: Smekhov, B. M., "The Limits of Precision of the National Economic Optimum," EKONOMIKA I MATEMATICHESKIYE METODY, No 3, 1980.
3. Amosov, A., "Planning the Branch Structure of the Agroindustrial Complex," VOPROSY EKONOMIKI, No 5, 1982.
4. PLANOVYE KHOZYAYSTVO, No 5, 1983, p 51.
5. See: Lenin, V. I., "Poln. Sobr. Soch." [Complete Collected Works], Vol 29, p 172.

6. Shatalin, S. S., "Funktsionirovaniye Ekonomiki Razvitogo Sotsializma: Teoriya, Metodologiya, Problemy" [Functioning of the Economy of Developed Socialism: Theory, Methodology, Problems], Moscow, Izd. Mgu, 1982. It is reviewed in EKO. See: Kazakevich, D. M., "Investigation of Crucial Problems of Economic Theory," No 10, 1983, p 169.
7. For more detail see: Smekhov, B. M., "Perspektivnoye narodnokhozyaystvennoye planirovaniye (problemy optimizatsii)" [Long-Range National Economic Planning (Problems of Optimization)], Moscow, "Ekonomika", 1968.

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## DISPATCHER'S WORK WEEK DESCRIBED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 105-114

[Article by V. M. Sharkov, general director of the El'ta Production Association (Yelets): "Seven Lights in the Dispatcher's Week"]

[Text] The notes of Georgiy Aleksandrovich Golovanov frankly describe the everyday life of the director of the enterprise, his concerns and experiences, his successes and failures. They are familiar and comprehensible to me.

Like many modern directors, I began to work at the plant as a shop chief. In 1966 I became a head engineer, and 6 years ago they entrusted the post of director to me. There was an essential difference. It is typical of the work of the head engineer to deal with questions of the preparation of production, but for the director the main thing turned out to be work with people, a constant and delicate job.

A graduate of a technical VUZ who has ended up in production sooner or later will understand the main defect of his education--the inability to work with people. It is difficult both to be subordinate and to give orders. G. A. Golovanov recalls this in his notes, but for me personally this problem has cropped up again in a new way.

In my opinion, four areas of work are fundamental for the director: personnel, organization of production, development of production capacities and preparation of new items for output. The order of importance of these problems is approximately as they are listed above. If the plant is operating well, this is primarily because of well-selected production commanders. And the key figures here should be young, energetic shop chiefs. They are the only ones who can make the work of the plant manager easier and increase its effectiveness. If the director is not confident that the chiefs of the shops or branches can take on the responsibility for decision-making, he is doomed to be bogged down in daily trivia.

A high level of production and good rhythm of the main production processes are evidence that the problem of management personnel has been solved. If the work proceeds calmly, without strain this means that skilled, experienced

specialists are working in the positions of foremen and chiefs of sections and shops.

Two slogans were popular in the 1930's: "Personnel Decide Everything" and "Technical Equipment Decides Everything." Now I have given preference to the former, for our technical equipment is not bad. It is equally difficult to determine what is in greater need of improvement in personnel who are responsible for the effective utilization of technical equipment: their attitude toward labor, their qualifications or their decisiveness in action. But there is no doubt that these qualities of the workers should be constantly in the range of attention of the director. This does not mean that he must meet with his subordinates frequently, but he should always know and think about the results of their actions. For example, I personally consider it sufficient to meet with the shop chiefs once a week. And the less the need for frequent contacts, the better the work is going.

Before describing the weekly schedule which has gradually taken form over years of work and which I consider expedient, I wish to emphasize once again the importance of selecting middle-level managers. This is actually what my subject is.

Monday--the day of the directors. Nowadays at many enterprises and production associations collegial management agencies have been formed. Ours is called the directorate. Its essence, however, lies not in its name, the more so since there are no scientific developments or recommendations regarding the work of these management agencies at the level of the associations and enterprise. The directorate includes 14 managers who are directly subordinate to me. In addition to them there are the managers of the party and Komsomol organizations and also the chairman of the people's control group.

The directorate meets for exactly an hour--from 9 to 10. During this time we manage to consider about 12 issues which require operational decisions. Since it is known from the beginning that we will not meet for more than an hour, the maximum time for considering one issue is 5 minutes. At first this rule seemed to everyone to be terribly difficult, but they gradually became accustomed to it.

The questions considered by the directorate are from various levels. The main requirement is that all members of the directorate must be interested in them. The given question may affect some of them directly and for others it may be useful information, but all of them must be interested in the problem that is being discussed and in having it resolved intelligently. Some examples of issues: concerning the fulfillment of the production plan; the creation of the repair and construction shop; fines; complaints from workers at the report and election meeting; rearrangement of the warehousing facility; provision with living premises; assistants to the technical school, and so forth. Each participant in the meeting is interested in these issues. Each one listens and draws conclusions for his own work.

Sometimes work memorandums signed by the director are considered regardless of whether they pertain to everyone or not. These memorandums are discussed publicly, and if there is the slightest possibility, everyone in attendance is

shown the solution to the problem which the author of the memorandum could have found independently, without turning to the director. But one should not go too far here either. The director has one scale of degrees of importance while the shop chief has another. What seems minor and trivial to the director could be the central problem of the day for someone else. Therefore it should be compulsory to act on job memorandums.

The word "educate" is now used on the pages of the press mainly with respect to schoolchildren. I am convinced that adults too, solid heads of families, can and should be educated. But if it is permissible to give sermons to schoolchildren, although, as a rule, fruitless, it is simply ridiculous to give them to a person who has experience in life, and it is not in line with common sense. The main way of educating is the personal example. If I manage to follow the rule to the letter in the directorate, this means that my subordinate will also adhere to it in his conferences, and he will free up time for other work. And as a result of his increased business activity, my work will be easier. If a subordinate sees that a director is avoiding memorandums, perhaps he too will directly imitate him, but find a way of putting a stop to an unnecessary flow of paperwork or introduce mandatory agreements without his participation.

The hour of the directorate, in my opinion, is the best political and educational hour. The director cannot meet with each of a thousand workers who are under his leadership, and he cannot explain the decisions of party congresses and plenums in a private conversation. This is the task of the agitators and the propagandists. But in his position the director can conduct political and educational work through well-thought-out organization of the process of management. Although as a member of the party and a propagandist, nobody can fill the shoes of the director in his role as an agitator. But more about this below.

On Monday, at 3 in the afternoon the technical and economics council meets. All managers of functional services attend it. During an hour and a half they consider one or sometimes two issues. These are more fundamental than the ones that are discussed by the directorate: reduction of production costs; strengthening discipline; training personnel, and so forth. As a rule, the decisions of the technical and economic council are reinforced by an order for the head plant or for the association. In any case, after the meeting, on the card for monitoring efficiency and discipline there appears the name of the person who is responsible for implementing the decision that has been made. An evaluation of the work is mandatory, and in a subsequent order one could find a penalty or a warning.

Various proposals are usually raised in the technical and economics council. The authors of these should be supported. There are also sad jokes like the following: "Initiative is punished" or "Do not suggest anything to the management, for you will have to carry it out yourself." The second saying, according to my observations, turns out to be justified more frequently--nobody carries out an assignment better than the person who suggests it. But here I am trying to adhere to a principle which I derived myself. If a person has to carry out a suggestion which he has made, there is no need to set any

deadlines. Only later, after the assignment has not been fulfilled for a long time, can one give a flexible time period.

The plan for the work of the technical and economics council is drawn up ahead of time, and it is rarely adjusted during the course of the year. As distinct from this work, the meetings of the directorate are not planned ahead of time and they consider current problems as they come up. The directorate and the technical and economics council are not made up of the same people.

Tuesday. Beginning at 10 am there is a production conference which is attended by the managers of the services and shops who are participating directly in the fulfillment of the current monthly assignment. The following policy has been adopted at the conference. First reports are given by the managers of subdivisions who, for one reason or another, are holding up the fulfillment of the plan. During the first years when I was in the post of director, when I held production conferences they were actually limited to this. I only made sure that the discussion did not come down to mutual reproaches and that it was constructive and produced results. The number of issues that were discussed was also limited and established ahead of time, although arbitrarily.

Gradually I began to listen more and more to the remarks of those managers which were not mentioned in the production conferences. "Now things are going well for us, but we will not be working as well if immediate measures are not taken," they said. And now at the production conference they do more than just explain the reasons for the arrears. Those for whom things are going well can take advantage of the right to raise on their own initiative two or three issues which are bothering them.

This procedure, which was not introduced at my insistence, has turned out to be a good instrument for management. It is more effective to overcome anticipated difficulties and bottlenecks than it is to manage according to deviations. Moreover, it becomes possible to call for a strict account of why a manager has not sounded the alarm ahead of time and has not taken measures. Of course there are people who do not take measures so much as they try to protect themselves from personal responsibility. But here the director should be oriented toward the actual situation and take note of whether a given worker has made a system out of this avoidance of responsibility.

Tuesday is also a day for receiving visitors on private matters. Any director will recognize the psychological load of this day.

Wednesday is the day the director has free. For most directors this is a day for public organizations. There are meetings of the commissions for cost accounting [khozreschat] and special projects, and there are small meetings which are planned ahead of time. Classes are held in the system of political training, in the system of economic general training and in schools for communist labor. I conduct a seminar entitled "Work of the Manager" and I consider this work to be important. On the surface it might not seem to pertain to production, but one can see its favorable influence on the system of management.

For the enterprise Wednesday is the day of the head engineer, the day of preparation of production. Out of principle I do not intervene in the measures he conducts. There can be no differences of opinion between the director and the head engineer, for in their coordinated work lies the guarantee of successful management. I think that it is quite inadmissible for any third person to know about their differences of opinions, even temporary ones. Therefore regardless of what the head engineer may do on Wednesday, I do not allow myself to revise his decisions. Not to intervene is a very important principle in the art of management. On Mondays and Fridays there is an operations meeting at 11 am. It is conducted by the deputy director for production. I listen and remain patient. Sometimes my hand reaches for the button of its own accord. But only the head engineer is allowed to intervene during the course of the operations meeting. Incidentally, even he cannot abuse this right.

Thursday is the day of quality. Questions of quality are within the competence of the head engineer. He is the one who holds the conference on quality at 3 every Thursday afternoon. I sometimes attend this conference. With the rights of one of the participants I intervene, give evidence and give advice.

We are in fairly good shape with respect to product quality. The main product of the association--movie cameras--has been awarded the State Emblem of Quality. Our output of movie cameras is higher than the branch level.

The zero-defect system which has been introduced at the plant contributed to this. It immediately began to produce good results. In all of our achievements in the sphere of product quality the head engineer deserves more credit than I do. In general the division of functions between the director and the head engineer can be defined by the words "joint work." There are spheres in which I try not to intervene--these include problems of quality and preparation for the production of new items. But there are also problems which are strictly my own. They include, in particular, questions of capital construction, the development of branch plants, socialist competition and so forth. Socialist competition is a manifestation of initiative from below, but this important aspect of production activity should not move beyond the attention of the head manager. It is very important for him to cooperate with public organizations. The major concern is that the commitments do not begin to include "trivia" and that they are difficult and appreciable for the collective as a whole. For only on the socialist commitments of the subdivisions can one build socialist commitments of the collective of the enterprise. We have also introduced a special procedure--defense of the socialist commitments of each shop. It is prepared for by workers of the division of organization of labor and wages and the trade union committee. The director's constant attention to this matter forms a generally serious attitude toward it on the part of managers of the middle level and the rank-and-file workers. "Just take"--this approach is completely precluded.

For example, there is the work of the councils of brigade leaders. There is a council of brigade leaders under the director and councils of brigade leaders under the shop chiefs. Workers of the division for labor and wages provide for contacts between the director and the council of brigade leaders, and they

prepare for discussion questions that interest the brigade leaders. Once a month I try to visit the meeting of one of the shop councils of brigade leaders.

Friday proceeds under the banner of capital construction and capital repair. These concerns are known to all directors for their confusion, but they are all of the same type. The capacities of the contracting organizations are weak and the supplies of construction materials are only enough to whet the appetite. Carrying out construction through internal reserves is like cutting to the bone. For there are no superfluous people at the plant, and there are not enough materials. On Friday it is mandatory to take a tour of the objects under construction. If it is possible to trust information from one's subordinates regarding a well-arranged technical process, with respect to a construction project one should believe only one's own eyes. We are not speaking about the potential for deceit, but about the fact that from information that comes in it is impossible to gain an idea of how things are in reality.

I shall note one fine point. Construction and capital repair constitute only a part of reconstruction, and the main part of it--technical re-equipment and replacement of equipment with more modern equipment--in keeping with our tradition are included in technical preparation of production. As we know, this is the sphere of the activity of the head engineer. He has a deputy for preparing production whose duties include, in particular, filling up the production schedule during the replacement of equipment, capital repair and so forth. More than 98 percent of our increase in production volumes under the current five-year plan was achieved as a result of increasing labor productivity, which conventionally released every fifth worker. This would have been impossible without rigid control over technical re-equipment.

Saturday is a half working day for the director. In order for 14 people to be able to deal with 12 production issues on Monday, one of them must spend several hours on Saturday preparing for the meeting. Usually I handle this alone, but sometimes I ask my closest assistants to help me. In general I do not keep anybody after work. But if things are going fairly well for someone, a person may work after hours without anybody paying any attention. For the director this is, on the one hand, the first signal that things are not going well, and, on the other, a fact which shows the manager in a positive light, as someone who is concerned about the section entrusted to him.

Sunday is a day of rest. Here too the director should provide an example. If he sits at work on Sunday, there will be people who take this as the norm and try to imitate him out of good intentions. Our city, Yelets, is small, but it is old and rich in industry. El'ta has its own microrayon. Everyone, including the director, is on view. Correct organization of recreation is no less important than production conferences.

Labor turnover remains at the level of 6.3 percent. This is mainly youth with a work tenure of 1-2 years. They are released for various reasons which, it seems to me, can be combined into one: the people have not found themselves, their place in life. It is very important to show them a combination of interesting work and full-value recreation.

The turnover among engineering and technical personnel is about 2 percent. We have practically no hiring from the "outside" for engineering positions with a secondary technical education. The association has its own tekhnicum and we try to keep the best for ourselves. The situation with housing is fairly complicated. We have a good palace of culture, preventive medicine dispensary and recreation base on the Don. But there is no swimming pool or full sports complex. The director's Sunday reflections are directed toward this and also other things.

Moreover, when if not on Sunday can one think about how responsible and varied is the work of the director himself. For I have not mentioned one of the thousands of matters that are joined together under the comforting heading of "in the work routine." It is useful to think on Sunday of how many rights have been granted you.

There are, of course, matters which cannot fit into the weekly cycle. Matters which come up "in the work routine," can be put off, but numerous things that come up from outside cannot.

Once a month I work with representatives from the branches. They have two associations, both in neighboring oblasts. Both were created with the goal of utilizing the labor resources of small cities. Our relations with the branches are good, and therefore issues are resolved with the visiting branch managers on the spot and without friction. Almost always at the center of the discussions are difficulties with material and technical supply which are the causes of the main difficulties in the branches. It is difficult to help the branches operationally because they are located so far away.

Branches are a good direction for the development of production associations. Unfortunately, in recent years this development has been held up by a lack of desire on the part of local management agencies to develop industries which produce batching components for the head enterprises. Previously, even at the beginning of the 1970's, the conditions were not stipulated, and now they say: "Let us produce prepared items, so that the branch will have its own image." This would be correct if it did not impede specialization and the natural development of industry as a whole, and did not regard the growth of the effectiveness of capital investments.

Incidentally, here we are touching on problems that go beyond the framework not only of the week or the month, but also beyond the framework of the individual production association.

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## ONE DAY OF DIRECTOR'S WORK DESCRIBED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 114-117

[Article by B. N. Volgin, candidate of economic sciences, higher economic courses under the USSR Gosplan (Moscow): "One Day With the Director"]

[Text] I spent one day at the El'ta plant without leaving the director, Vladimir Mikhaylovich Sharkov. While respecting the reader and his ability to draw his own conclusions, I shall allow myself to limit my "commentary of a specialist" on the workstyle of a director which the editorial staff requested of me. I shall limit it to a presentation of facts and quotations from V. M. Sharkov, which if not completely, sufficiently clearly sketched the image of the manager of the enterprise and the style of his work.

In the morning I found myself in the weekly operations conference (directorate). V. M. Sharkov very briefly related the situation: on that day (26 December) the plant had completed the plan for the first 3 years of the five-year plan, but it had still not fulfilled the plan for December. During the past days there had been delays in the assembly of electronic ray tubes because of the failure to deliver batching elements, in packaging (there were no cardboard cartons), and in shipment (there were no cars). In terms of capital construction--we are completing an almost impossible job in housing construction, and we shall continue to send 40 people each day to help the construction workers. In socialist competition--I draw everyone's attention to the construction of the second hog sty (for young piglets). So far this commitment has not been fulfilled.

The director spent a minute and a half on presenting the situation and thus set the tempo for the operations meeting. There were no detailed speeches, and those in attendance exchanged comments in one or two sentences. The meeting of the directorate lasted 35 minutes.

I do not wish to describe all the rest of the events of the day. The responses of the director seemed more interesting to me. They show his approach, his views and his style. I have jotted them down as closely as possible to his actual speech.

This is how the director reacts to the concerns of the day:

"...Life teaches us that the best result is produced by a concentration of efforts. In the future we shall handle not 12-15 objects at the same time in capital construction, but three: we shall be finishing the first, the second will be in full swing, and we shall be starting the third.

"...In the future I request that you append a graphic depiction to this assertion.

"...Release him of other matters and let him solve only this problem (one recalls from detective novels that in Petrovka-38 they took this approach when entrusting a complicated investigation to a worker of the criminal investigation department).

"...Who has visited the patient? A peptic ulcer? Will you drop in on him today? Good.

"...Let us not solve it that way. The problem should be divided into its constituent parts."

To a remark from a participant in the conference: "I myself do not suggest this, but now they are pestering me!"--V. M. Sharkov answered: "That always happens. But they will also respect you for it!"

"It is necessary to take your job calmly: to work and evaluate your activity self-critically, and to go on pension when the time comes.

"...There is no need to entrust the matter to three people. To make many services responsible for a job means to create a situation of irresponsibility.

"...Everything suggested at workers' conferences must necessarily be brought up for consideration by the directorate on the first Monday of the month and the workers must be given clear answers: what we have decided to do and when we will do it.

"...Two weeks ago there was a discussion among the directorate on a free topic--who suggests what to improve the work. Today we are summing up the results. We shall augment the 1984 plan with a system of continuous operational planning (we shall discuss it today in the technical council). In the socialist commitments we are expanding the number of indicators of quality of the items as was suggested. There are no objections?

"...I suggest that the decision of the directorate regarding the results of the year and the tasks for 1984 be worked out in classes in the system of economic education of the higher level of management."

A remark from the chairman of the trade union committee: "The managers are not coming to certain shop meetings, and they explain this by saying that they were not invited."

Sharkov: "What, are they not respected? Oh, they are respected...then invite them."

At the end of the day there is one more conference at the plant--the technical council. It is also conducted by the director.

On the agenda:

1. The construction of a warehouse. The conferences held by the deputy director on general problems. After four statements the director sums things up: "In 1982 we actively dealt with the warehouses, discussed their condition each week and, as a result, constructed four warehouses. In 1983 we eased the pressure, my deputy was no longer in charge of management and control, and therefore the construction of warehouse No 5 was not completed, although the work that was left amounted to only 10,000 rubles. It was not the conditions for completion that were missing, but the persistence. There was no documentation? It should have been produced and discussed as part of the job routine."

2. The introduction of a system of continuous operational planning (SNOP). The conferences held by the deputy director for production. V. M. Sharkov: "I expect from the SNOP first and foremost a reduction of circulating capital because of better accounting for incomplete production and a reduction of the reserve of prepared parts."

3. Defense of socialist commitments by shop chiefs. The first to defend them is the chief of the 16th shop. The commitments were discussed at a meeting of the party and economic aktiv of the shop and at a shop trade union committee. V. M. Sharkov: "I support everything, but I think that each shop should have a plan for 5 years, and beginning in 1985 we shall give such plans to the shops!"

The technical council lasted 55 minutes.

At the end of the day in a conversation with me V. M. Sharkov said: "My main concern is to select personnel and to create conditions for their work. Of course I try to help, but the most immediate kind of help is not to bother them while they are working. As for doctors there is a commandment: "Do not cause harm." Not to harass people, not to tie them up in trivia and not to teach them to come running to me with some problems that fall within their own competence. The in-house telephone in my office practically never rings before lunch. The shop chiefs have been taught to solve their problems independently and to go directly to other shops and services." I consider the recommendation of scientific organization of labor, "The manager should not raise his voice in a conversation with subordinates" to be incomplete. It would be better this way: "The manager should not raise his voice in a conversation with subordinates even if the subordinate raises his voice." Well, such a situation is encountered rarely. At the plant I speak in a noticeably soft voice and--have you noticed?--in our conferences everyone speaks calmly and in a steady voice."

The manager is not only a production worker, and he is not simply an educator either, but he is both at once. Any piece of advice or decision he makes regarding a production problem educates the people, and any educational statement should not be abstract moralizing, but it should be related to a current event in the life of the production collective.

I understand that from the remarks presented above one cannot compile a complete "portrait" of the director, and this is not what I wanted to do. But one senses a particular style, does one not?

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## METAL-INTENSIVENESS OF PRODUCTS DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 118-130

[Article by N. S. Sachko, doctor of economic sciences, professor, Belorussian Polytechnical Institute (Minsk): "Metal-Intensiveness of Products: Reserves for Economy"]

[Text] The USSR has colossal material and raw material resources at its disposal: we extract more iron ore, coal and petroleum than any other country in the world, we smelt more iron and steel, and we produce more rolled ferrous metals, cement, mineral fertilizers and raw cotton. Nonetheless, we do not have enough raw and processed materials, which has become one of the reasons for the reduced rates of economic growth. Therefore searching out reserves of material and raw material resources and utilizing them economically constitute a task of primary importance.

### Resources of Metal

Metal is still the main design material for industrial production. A shortage of it impedes the development of many branches, and machine building above all, although more than 150 million tons of steel are smelted and almost 110 million tons of prepared rolled metal are produced each year. It is possible to increase metal resources by improving their useful properties, reducing losses in production and consumption, and expanding the utilization of those materials which replace metals in machines and structures.

Ferrous metallurgy has large reserves at its disposal for reducing wastes. Thus an increase in the proportion of continuous smelting of steel of only up to 40-45 percent<sup>1</sup> will make it possible to obtain an additional 3-4 million tons of rolled metal a year. Smelting semikilled metal instead of killed metal will increase the output of rolled metal by more than 1 million tons each year. Secondary resources constitute an appreciable reserve; we now utilize only 40 percent of the mobile sources of secondary raw material.<sup>2</sup> The irretrievable losses of household metal wastes alone amount to about 400,000 tons a year.

Large reserves of metal can be produced by improving its useful properties. The higher the quality of the rolled metal the more items that can be

manufactured from it. According to estimates of specialists, a ton of rolled metal with high precision increases the resources of metal by 0.03-0.05 tons; rolled metal with guaranteed properties--by 0.029 tons; low-alloy and reinforced rolled metal--by 0.2-0.3 tons; bent profiles--by 0.25-0.35 tons; and cold rolled sheet metal--by 0.2-0.3 tons.<sup>3</sup> Thus improvement of the structure of rolled metal and improvement of its qualities make it possible to increase the resources of it considerably (according to various estimates, from 16 to 25 million tons a year).

The production of substitutes for traditional materials, above all, synthetic and artificial materials, open up the prospects for expanding raw and processed material resources. Synthetic materials are effectively crowding out both industrial and agricultural raw material (metal, wood materials and fibers). Thus each ton of plastics in the parts of machines replaces 2-3 tons of metal.

Our country annually produces more than 3.5 million tons of plastic. An expansion of their production by 10 million tons would be tantamount to increasing metal resources by 20-30 million tons.

Large reserves of design materials are opened up with an increase in the proportion of those which are distinguished by high useful properties. Thus improvement in the quality of metal and expansion of the output of substitutes for it will make it possible to increase metal resources by approximately 50 percent.

But there are limits to the growth of material resources. But a truly limitless source of the development of production is the reduction of the material-intensiveness of the final product.

#### The Logic of Material-Intensiveness

The lion's share of design material which are consumed in the production of means of production go primarily for the manufacture of machines and equipment. The materials go through many stages of transformation from the time they are produced until they are embodied in the final product. Let us trace the sequence of the movement of materials and consider the possibilities of saving on them in the various stages of the process of the production of machines and equipment and the output of the final product.

The main form of equipment for manufacturing implements of labor is found in metal-cutting machine tools and forging and pressing machines. According to the author's estimates, the overall mass of materials (mainly metals) in the stock of metal-processing equipment in the national economy exceeds 20 million tons. Such an impressive figure explains the high material-intensiveness of metal processing. The main reasons are the excessive material-intensiveness of machine tools, the low level of their utilization, the inefficient structure of the metal that is produced, and its overexpenditure in machine tool construction.

The increase in the working parameters of equipment in machine-tool building is expressed in the fact that machine tools that are intended for processing

large parts at high rates are manufactured in much larger quantities than are required. Thus in machine building, in the majority of cases, the diameter of parts that are processed on lathes does not exceed 220 millimeters. Yet we produce one-fifth as many lathe and threading machine tools for small parts as we need, while we produce 6 times as many machine tools for processing large parts as we need.

The reasons for the surplus of operating characteristics are not so much objective as subjective. The operation of the machine tool-building enterprises is evaluated not in terms of the final results (the potential production capacity of the equipment), but in terms of the mass or monetary expression. This is why from year to year the average material-intensiveness increases, and the prices of machine tools increase even more rapidly. Machine tool building is producing mainly heavy and costly machine tools.<sup>4</sup> As a result, the metal is expended unjustifiably. Each year about 1 million tons of metal are used for the manufacture of machine tools in the national economy, that is, approximately 3 times as much as could be used if we were to take advantage of world experience.

Another reason for the increased material-intensiveness of technological equipment of machine-building plants is the low level of its utilization. Since the 1960's the coefficient of shift work of equipment in basic production has decreased gradually and now is equal to (taking into account intrashift idle time) 1.2-1.35, and in auxiliary production it is 0.3-0.4, while with two-shift work it is possible to have a shift coefficient of 1.7-1.8. Since about half of the metal-cutting machine tools and forge and press machines are concentrated in auxiliary shops of machine-building plants and at plants of nonmachine-building branches, increasing the coefficient of shift work to 1.8, and in auxiliary production to only 1.0 would it make it possible to reduce the stock of metal-cutting equipment by 40-45 percent. Large reserves for utilizing equipment and, consequently, reducing the material-intensiveness of metal processing are opened up by equipping the machine tools with fittings and instruments which increase their productivity by 30-50 percent.<sup>5</sup>

In metal-processing equipment there is a high proportion of metal-cutting machine tools while there are not enough forge and press machines for processing under pressure. In the stock of metal-cutting equipment there is a low proportion of machine tools for finishing and specialized operations (cutting-off, thread-cutting, sharpening, polishing and so forth--which are relatively simple, easy and productive.

To a certain degree this situation is explained by objective circumstances. Our country produces relatively few light machines (passenger cars, small tractors, instruments and so forth) whose production is based on specialized equipment. Moreover, the prevalence of high-grade rolled metal (instead of sheet metal) presupposes the utilization of more universal and, consequently, heavier machine tools and forge and press machines than are used for processing sheet and profile metal. In other words, too much metal is used for the manufacture of metal-cutting machine tools so that later they can be used to turn it into shavings.

Considerably less metal-intensive rolling equipment is used in the production of light and shaped rolled metal. Thus in order to produce a ton of shaped welded profiles it is necessary to have equipment with ten-thirty-ninths the weight that is required for the manufacture of I-beams with a similar bearing capacity using a universal rail-forming machine tool.<sup>6</sup>

Large reserves for economizing on design materials can be found in the production, for example, of agricultural equipment. In 1982 we produced 585,000 tractors with an overall capacity of 47.9 million horsepower, and 5.6 billion rubles' worth of field machines and machines for animal husbandry and feed production.<sup>7</sup> The production of this technical equipment required about 7 million tons of metal. According to the estimates of specialists, the average metal-intensiveness of agricultural machines is high, and a good deal of technical equipment is produced.

The fact is that with the high saturation of metal products, especially machine-engines, agriculture is experiencing a critical shortage of machine implements. Agriculture does not receive enough machines and mechanisms which are necessary for the mechanization of labor: mowers, press-pickups, pilers, crane-loaders, distributors, potato and vegetable harvesting combines, technical equipment for initial processing and preparation of products for storage, technical equipment for preparing and distributing feeds, and mounted implements. Such machine implements are distinguished by low material-intensiveness, which makes it possible to improve a great deal the utilization of the same tractors, trucks, combines and other machines, and the main thing--to greatly increase the productivity of agriculture. Here is one of many examples. On the Bratslavskiy Sovkhoz in Orenburg Oblast the average productivity of grain crops is 16.5 quintals per hectare, and on a section with organic fertilizers it is 30 quintals per hectare. While there is an abundance of such fertilizers they have not been shipped onto the fields for many years because of the lack of specialized technical equipment, and mainly bucket loaders.<sup>8</sup>

#### The Material-Intensiveness of Shipments

Among the key conditions for reducing the material-intensiveness of products are streamlining the cargo flows and improving the structure of the rolling stock in transportation. The material-intensiveness of processes of moving means of production and other products to the consumer depends on the quantity of cargo and the distance of shipments as well as on the nature of the means of transportation and their utilization. In our country general-purpose transportation is used to transport about 18 billion tons of cargo each year, and approximately the same amount is shipped with departmental transportation. The overall cargo turnover exceeds 6 trillion ton-kilometers. The lion's share of the cargo turnover (more than 3.5 trillion ton-kilometers) is on the railroad--more than anywhere else in the world.

From year to year the average distance of shipments increases. During the decade of 1971-1980 it increased from 860 to 920 kilometers, or by 7 percent. Usually such a tendency (like the colossal cargo turnover) is explained by the immense territory of our country and by the fact that most of the cargo is shipped by rail. This is only partially justified. The territorial factor

would explain this if industrial production were distributed uniformly. But actually most of the industrial products are produced in the European part of the country and the Urals.

The immense cargo turnover with a regular growth of long-distance shipments and the high level of their material-intensiveness indirectly show that there are inefficient cargo flows and cargo flows that meet one another. Thus in spite of the rapid growth of the transfer of petroleum and petroleum products through pipelines, the average distance of shipment of a ton of petroleum on the railroad has increased from 855 to 915 kilometers during the 10 years.

Another reason for the high material-intensiveness of shipments is the low proportion of automotive transportation in the cargo turnover and its poor utilization. The average distance of shipments by automotive transportation is only 20 kilometers. Yet just by switching rail shipments of distances up to 50 kilometers over to automotive transportation would reduce expenditures by 500 million rubles and would release almost 10,000 people who are employed in loading and unloading work. Moreover, improvement of the utilization of the automotive fleet (about 80 percent of it is departmental) would almost double the handling capacity.<sup>9</sup>

The third reason is the lack of correspondence between the cargo capacity of the rolling stock and the needs. We produce only one-third of the necessary quantity of trucks with small (up to 2 tons) and large (more than 5 tons) cargo capacities. And we produce approximately twice as many of the average trucks (2-5 tons) as we need. We do not produce enough powerful loaders and truck trains, which leads to increased material-intensiveness of the shipments.

The need of the national economy for small cargo trucks is estimated at no less than 1 million. Their application would make it possible annually to save 2-3 million tons of gasoline and to reduce the overall metal-intensiveness of automotive shipments by 250,000-300,000 tons.<sup>10</sup>

#### Periods of Service of Technical Equipment and Spare Parts

According to the estimates of Soviet and foreign specialists, there is a real possibility of prolonging the service lives of machines and equipment by 30 percent and more.<sup>11</sup> Then the material-intensiveness of the final product would decrease essentially. This would require, of course, expansion of the production of spare parts (up to 12 percent of the mass of technical equipment). But then the material-intensiveness of the final product could be decreased by almost 20 percentage points.

In many cases the manufacturers of machines do not provide the consumers with the necessary quantity and the proper quality of spare parts. They are made under primitive conditions with an overexpenditure of metal and other material and labor resources, and they have high operational characteristics. As a result, up to 20-25 percent of the metal of the mass of the machine and equipment is expended for the manufacture of spare parts instead of 10-15 percent. Complete provision of the national economy with spare parts from

specialized production would make it possible to save 10-15 percent of the metal that is expended in the production of technical equipment.

There is a need to redistribute resources and funds in favor of large-scale output of replaceable parts and spare parts over the output of prepared machines. It would apparently be correct to allot the ministries funds for metal and other materials not according to the output of tractors and agricultural and other machines, but according to the quantity of products that are created with them. Then there would be a stimulus to produce primarily the machines that are necessary to agriculture in both quantities which would contribute to their efficient utilization and to the provision of spare parts for the technical equipment.

#### Progress of Technical Equipment and Technology

Inexhaustible possibilities of reducing the material-intensiveness of the social product lie in improving the designs of machines and the technology of their manufacture. All other conditions being equal, the lighter the equipment, the lower the material-intensiveness of the product that is obtained with it. Thus the utilization of the EKG-4.6B UTZM excavators with a productivity of 1.85 million cubic meters a year instead of the EKG-4.6A with a productivity of 1 million cubic meters makes it possible to increase the removal of rock by 75 million tons, which is tantamount to saving 7,000 tons of steel.<sup>12</sup>

Unlimited prospects for reducing the material-intensiveness of machines both as a result of reducing their weight and by improving the utilization of metal, are opened up by improvement of the technology for obtaining blanks and processing parts. The expenditure of metal depends essentially on the method of obtaining blanks. For each ton of blanks made of steel castings one uses 517 kilograms of metal, from iron castings--341, and from rolled and stamped metal--less than 200 kilograms.

As one can see, the least efficient method of obtaining blanks is casting, and the most efficient are rolling and stamping. Casting blanks involves an overexpenditure not only of material, but also of labor resources. According to the calculations of I. G. Pashko, labor productivity in foundries is one-twelfth that in rolling mills. For every 1 million tons of cast metal there is an overexpenditure of more than 375 million rubles' worth of capital investments and more than 140 million rubles' worth of operational expenditures a year as compared to rolling.<sup>13</sup> But obtaining blanks by casting not only is not decreasing, but is increasing from year to year.<sup>14</sup>

Thus a reduction or at least a stabilization of the output of castings is one of the conditions for reducing the material-intensiveness of machines.

Another method of obtaining blanks of parts is forging and stamping, that is, plastic deformation. Processing metals with pressure is economically advantageous as compared to cutting: the need for metal is reduced by 25-30 percent, capital and labor expenditures decrease by 30-40 percent, and the production cost of the items decreases.

In processing metals by pressure there are extreme differences in the degree to which the blanks approach the forms and sizes of the prepared parts according to the various methods of obtaining them. The least effective is forging, whereby the wastes reach 45 percent, and the most efficient are drop forging, cold heading, and stamping from periodically calibrated rolled metal and from cold rolled sheet metal. The coefficient of the utilization of metal then reaches 0.72-0.8, and when the blanks are obtained from bent profiles--0.92.

But up to this point approximately 60 percent of the blanks in domestic machine building are obtained by free forging and other traditional methods, and only 40 percent--by progressive methods. According to the estimates of specialists, 9.1 million tons of stamped pieces can save more than a million tons of rolled metal, or almost 12 percent. How realistic these figures are is shown by the experience of the AvtoZIL Association where it is intended to increase the coefficient of the utilization of metal from 0.7 to 0.83 and to save 120,000 tons of metal annually.<sup>15</sup>

An extremely effective method of obtaining large unique blanks is electric slag smelting. Replacing free forging with smelting increases the all-round coefficient of the utilization of metal from 0.3 to 0.7; and the allowances for mechanical processing of hearts are cut in half. Changing over only half of the output of forged pieces to the progressive method would make it possible to reduce metal expenditures by 1.3-1.5 million tons a year.<sup>16</sup>

One of the most promising methods of obtaining parts is pressing them from metal powder. The utilization of this method will save an average of 1.4 tons of metal per ton of items (at AftoZIL--1.8); the number of operations for mechanical processing is reduced by 85-90 percent (on an average from 30-40 to 4-6); and the production cost drops. In 1978 the United States produced 328,000 tons of metal powder, including 217,000 tons of iron. According to the plan for the 11th Five-Year Plan the output of metal powders in our country will increase three-fold. There is a possibility of increasing their production to 400,000-450,000 tons a year, with a large savings on metal.

The greatest expenditures of resources, both labor and material, are required by mechanical processing of parts. Each year 10-12 million tons of metal go for shavings, which costs more than 5 billion rubles. No small role is played here by surplus allowances for mechanical processing. According to the estimate of the Scientific Research Economics Institute of the Ukrainian SSR Gosplan, from 50 to 90 percent of the labor is expended on removing excess allowances and rough processing while only 4-12 percent of the labor is expended on pure processing.

One of the reasons for the excessive allowances is the shortage of powerful polishing equipment. Therefore changing the structure of the output of metal-cutting machine tools and equipment for finishing operations and, thus, reducing the allowances for mechanical processing by 10-15 percent<sup>17</sup> would contribute to reducing the material-intensiveness not only of machine-tool building products, but also of products of other branches of machine building.

The review of the variables in material-intensiveness using the example of the production and operation of machines and equipment shows that the utilization of known and already assimilated scientific and technical achievements opens up the prospects for reducing the metal-intensiveness of public production approximately by half. There is now a need to create a national economic comprehensive program for economizing on raw and processed materials, and metal above all. The program could envision economizing on metal as a result of:

improvement of the structure of the output and utilization of the stock of metal-cutting equipment--by 1-3 percent;

coordination of the operational indicators of the machines--by 5-15 percent;

prolongation of the time period for the service of machines and more complete utilization of them--by 20 percent;

providing the stock of technical equipment with spare parts from specialized manufacture--by 5-6 percent;

making technical equipment "lighter" and bringing the masses of the machines and equipment down to world standards--by 10-15 percent;

increasing the coefficient of the utilization of metal--by 10-15 percent;

creating systems of implements of labor for comprehensive performance of production operations (especially in agriculture)--by 2-3 percent.

The reserves of material resources as a result of economizing on them are great not only in the production and consumption of ferrous metals. Thus the proportion of procured timber which is used for chemical processing can be increased, as world experience shows, 4-5-fold. And chemical processing of one cubic meter of timber produces a 2-3-fold increase in the amount of prepared products as compared to direct utilization of it. In addition, the processing of timber raw material makes it possible to reduce the material-intensiveness of the final product by 28-30 percent and to salvage the wastes. The output of products of the pulp and paper industry can thus be increased 8-10-fold without increasing the felling of timber.

The prospects for economic growth both as a result of bringing in material and raw material resources and as a result of reducing material-intensiveness of public production are unlimited. All-around economizing on raw and processed materials would mean nothing other than a changeover of the national economy to a path of mainly intensive development. It seems to us that the program for intensification could have the following sequence of solutions to key tasks and selection of areas for capital investments:

the construction and reconstruction of enterprises for thorough processing of raw materials and the production of effective processed materials (sheet metal, reinforced and indented rolled metal, light metals, plastics, synthetic and chemical fibers, comprehensive processing of timber and so forth);

technical re-equipment of the largest enterprises for the production of progressive implements of labor at the level of world models;

specialization of a multitude of medium-sized and small enterprises in mass output of parts, components and spare parts for continuous operation of the stock of machines and equipment;

organization of the output of systems of machines and mechanisms as well as instruments for comprehensive mechanization of agricultural and loading-unloading work, heavy and labor-intensive auxiliary operations, and so forth;

strict coordination of the output of mutually augmenting items in terms of parameters, quantity, service periods and so forth);

the allotment to the ministries, associations, departments and enterprises of material and labor resources per unit of final product.

the implementation of such a program presupposes responsible organization which can effectively deal with the colossal resources. It would seem that the USSR Gosplan should act as such a "holder" of funds and the agency responsible for intensification of the national economy. It would make sense to give it special authority for conducting programs for intensification.

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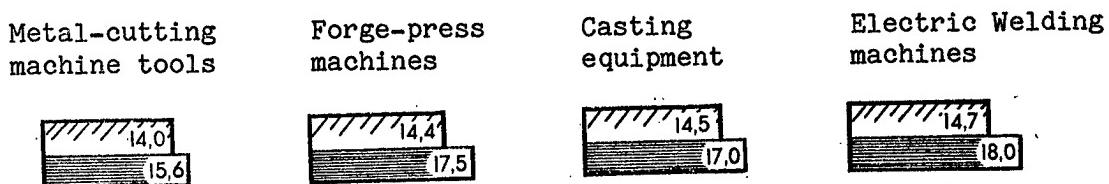
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CHARTS ILLUSTRATE USE OF METAL PROCESSING EQUIPMENT

Novosibirsk EKONOMIKA I ORGANIZATSIIA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Nov 84 pp 131-136

[Charts: "Metal Processing Equipment: How is it Used?" -- according to data from 24-hour observation on 19 May 1982 at machine building enterprises of machine building ministries. -- VESTNIK STATISTIKI, No 4, 1983, pp 68-70.]

Table. Proportion of Inoperative Metal Processing Equipment, in % of All Installed



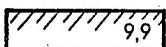
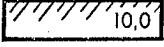
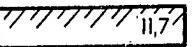
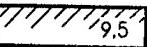
 -- in main production

 -- in auxiliary production

In Ministries		In republics	
Instrument building, automation equipment and control systems	11.0	Armenia	9.8
Tractor and agricultural machine building	13.6	Azerbaijan	10.0
Machine building for light and food industry and household appliances	13.9	Lithuania	10.7
Chemical and petroleum machine building	14.3	Kirghizia	11.0
Automotive industry	14.6	Latvia	11.2
Machine building for animal husbandry and feed production	14.8	Belorussia	12.0
Construction, road, municipal machine building	14.9	Georgia	12.3
		Ukraine	13.2
		Uzbekistan	14.4
		RSFSR	14.6
		Moldavia	14.8
		Estonia	16.6
		Kazakhstan	17.4

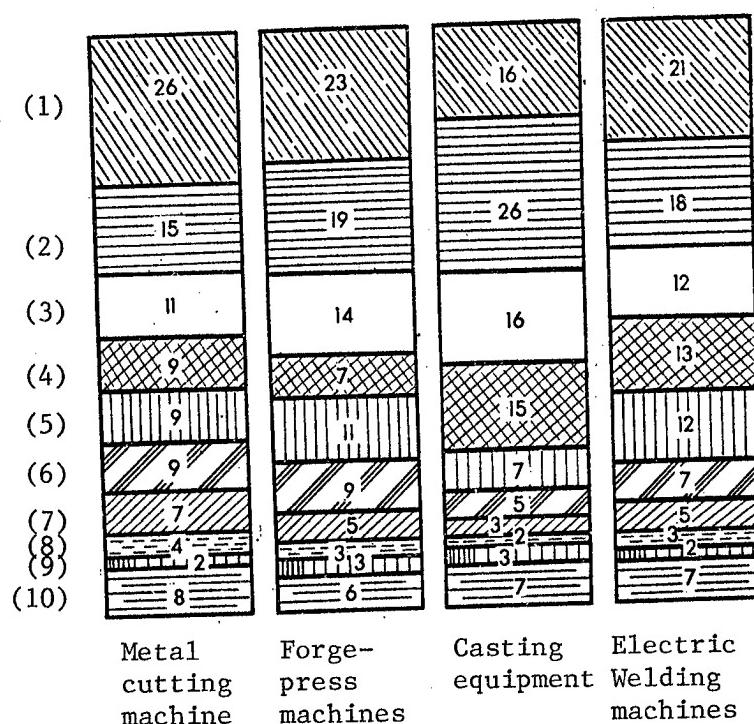
Machine tool and tool building industry	15.5	Tadzhikistan	19.1
Power machine building	16.3	Turkmenia	32.6
Electrical equipment industry	16.8		
Heavy and transport machine building	17.0		

Table. Machine-Hours Worked in 24 Hours per Unit of Installed Metal Processing Equipment

Metal cutting machine tools	Forge-press machines	Casting equipment	Electric welding machines
			

In ministries		In republics	
Tractor and agricultural machine building	10.6	Belorussia	10.9
Instrument making, automation equipment and control systems	10.5	Kirghizia	10.9
Power machine building	10.3	Lithuania	10.8
Automotive industry	10.2	Ukraine	10.3
Machine building for animal husbandry and feed production	10.2	Azerbaijan	10.2
Chemical and petroleum machine building	10.1	Moldavia	9.9
Machine building for light and food industry and household appliances	9.7	Latvia	9.9
Machine tool and tool building industry	9.6	Armenia	9.9
Construction, road and municipal machine building	9.5	RSFSR	9.8
Heavy and transport machine building	9.3	Uzbekistan	9.8
Electrical equipment industry	9.3	Kazakhstan	9.3
		Tajikistan	9.1
		Georgia	9.0
		Estonia	8.3
		Turkmenia	5.9

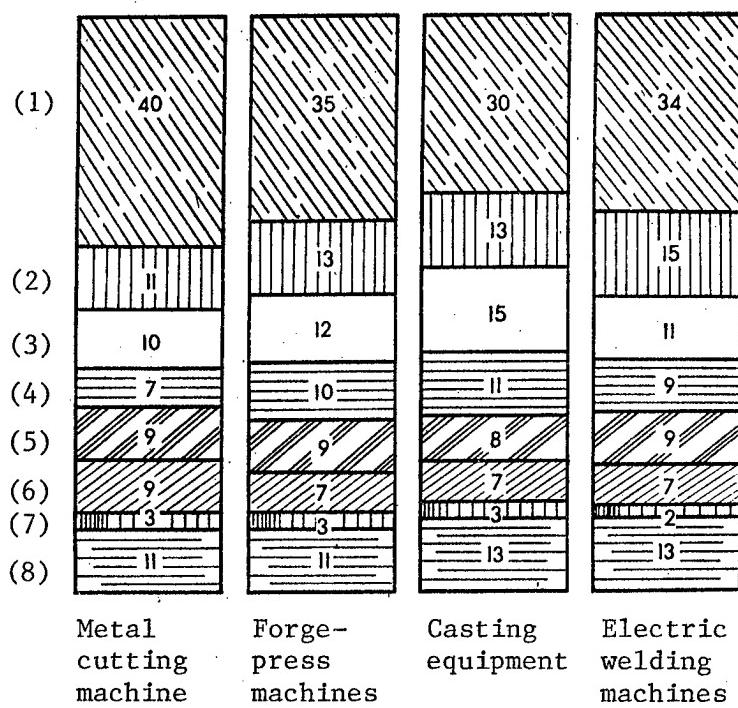
Table. Causes of Entire-Shift Down Time of Metal Processing Equipment in Main Production, % of Total



**Key:**

- (1) Not enough workers
- (2) Planned repair and modernization
- (3) Disrepair and unplanned repair
- (4) Reserve and storage
- (5) Lack of production building
- (6) Lack of raw, processed materials, blanks, parts, components
- (7) Worker absences with permission of administration, because of illness, etc.
- (8) Unnecessary equipment
- (9) Lack of instruments, technical specifications, energy lifting-transport equipment
- (10) others

Table. Causes of Entire-Shift Down Time of Metal Processing Equipment in Main Production, % of Total



Key:

- (1) Not enough workers
- (2) Lack of production building
- (3) Disrepair and unplanned repair
- (4) Planned repair and modernization
- (5) Lack of raw, processed materials, blanks, parts, components
- (6) Worker absences with permission of administration, because of illness, etc.
- (7) Lack of instruments, technical specifications, energy, lifting-transport equipment
- (8) others

Table. Intrashift Down Time of Metal Processing Equipment, % of Supply  
of Time of Machine Tool Shifts Worked

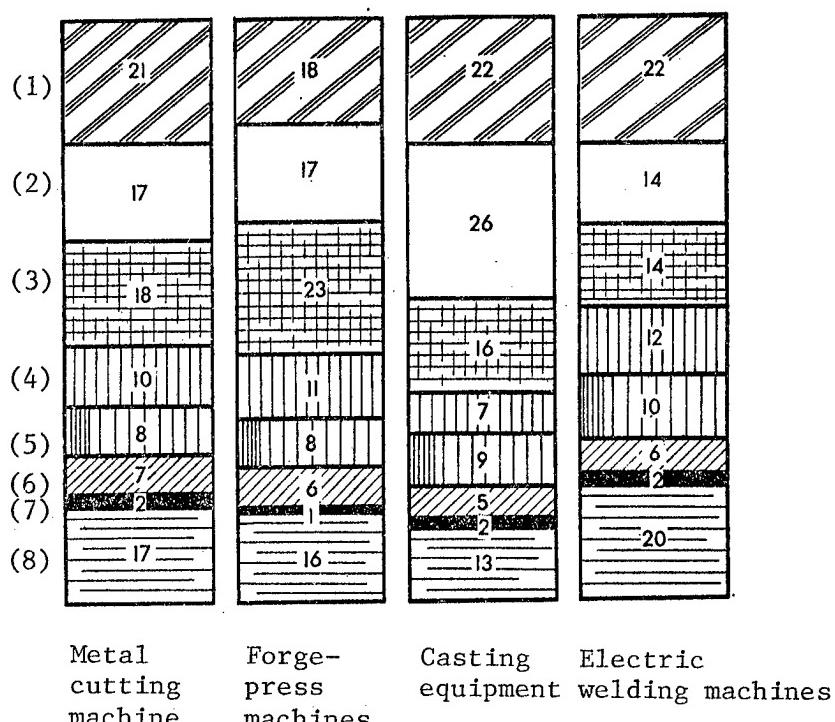
Metal-cutting machine tools	Forge-press machines	Casting equipment	Electric Welding machines
10,3	12,1	9,7	10,5

-- in main production

-- in auxiliary production

In Ministries	In republics
Power machine building	6.8
Machine tool and tool building industry	8.7
Chemical and petroleum machine building	9.1
Machine building for light and the food industry and household appliances	9.4
Instrument building, automation equipment and control systems	9.7
Construction, road and municipal machine building	10.8
Heavy and transport machine building	10.9
Electrical equipment industry	10.9
Machine building for animal husbandry and feed production	12.1
Automotive industry	12.4
Tractor and agricultural machine building	12.5
Armenia	8.2
Kirghizia	8.7
Azerbaijan	9.0
Uzbekistan	9.1
Turkmenia	9.1
Ukraine	10.1
Belorussia	10.2
Tajikistan	10.7
Georgia	10.8
RSFSR	10.9
Lithuania	11.5
Estonia	11.8
Kazakhstan	11.9
Moldavia	11.9
Latvia	13.4

Table. Causes of Intrashift Down Time of Metal Processing Equipment in Main Production, % of Total



Key:

- (1) Lack of raw, processed materials, blanks, components and parts
- (2) Disrepair and unplanned repair
- (3) Adjustment and resetting
- (4) Lack of production buildings
- (5) Lack of instruments, technical specifications, energy, lifting-transport equipment
- (6) Worker absences with permission of administration, because of illness, etc.
- (7) Worker absence in connection with violations of labor discipline
- (8) others

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## LIVING ACCOMMODATIONS FOR YOUNG WORKERS DESCRIBED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 137-149

[Article by A. E. Kotlyar, doctor of economic sciences, professor, Central Scientific Research Laboratory of Labor Resources (Moscow), and M. I. Talalay, candidate of economic sciences: "How the Young Worker Lives"]

[Text] There are 6 million people living in workers' dormitories in the country. These are mainly young people under 30 years of age.

Dormitories for youth today represent a concentration of practically all youth problems, both social and economic. Reducing the turnover of personnel at the enterprise, stabilizing the young family, increasing the birthrate and developing a worthy replacement for the younger generation all depend on whether or not the dormitories at the enterprise, including those for families of workers, are adequate, whether they are convenient for life, and how educational work is arranged in them.

"An independent life," said Comrade K. U. Chernenko at the July (1983) Plenum of the CPSU Central Committee, "is being entered today by the most literate younger generation in all of the country's history, the one with the greatest occupational training...but the party also sees negative phenomena in the youth environment. They are bothered by the delayed civic development and political naivete as well as the dependence of certain young people.... It is necessary to be constantly concerned about the ideological, moral, class and labor tempering of youth."

A great deal can be done in this area in working youth dormitories. Yet the construction of dormitories and their functioning are frequently determined by outdated normative documents. This makes it impossible to raise the work in them to the level of modern requirements.

We hope that the materials published today will evoke in the readers an interest and a desire to express themselves concerning the essence of the problem that is being touched upon.

Under the current five-year plan almost all of the growth of labor cadre will be provided from youth. Out of every 100 workers who are now being released from enterprises at their own request, 65 are young people under the age of 30.

These two facts placed side by side make it unnecessary to make edifying remarks about how important the problem of industrial stabilization of our replacements is today. The journeys of workers through the enterprises cost the national economy billions of rubles each year. And the social losses? No amount of money can measure them, but they are perhaps the most important of all.

The reasons for the turnover? There is probably no need to discuss them in too much detail either: the personnel worker, the shop chief and the director of the enterprise can name them themselves. And one of the leading ones is the shortage of housing. It has been established by research that an appreciable part of the workers who leave at their own request give the unfavorable housing conditions as their motivation for leaving the enterprise. It is typical that youth leave enterprises because of the poor housing conditions considerably more frequently than do workers who are over 30 years of age.

And here workers' dormitories, which play a special role in solving the housing problem, come to our assistance. In the first place, they occupy a major position in providing housing for such a specific group of the society as youth. The fact is that under the conditions of the still-continuing shortage of housing, youth frequently cannot compete with permanent workers in competitions for a separate apartment. On the other hand, the housing problem becomes especially significant for people who are building a family, and these people, as we know, are primarily youth. Moreover youth typically have high mobility, including territorial. Here too well-arranged dormitories of the hotel type can play a role in the temporary circulation of the housing supply. Further, dormitories are a form of providing workers with housing under specific production conditions: in regions of new economic assimilation and under conditions of watch work schedules, frequent changes in the geographical location of the work (for example in rural construction), and so forth. It seems that dormitories will continue to be important for a long time.

In order to study problems of developing this extremely specific kind of housing, workers of our division of the TsNILTR [Central Scientific Research Laboratory of Labor Resources] became familiar with the housing and cultural-domestic conditions in 118 workers' dormitories which were located in Moscow, Krasnoyarsk, Sverdlovsk, Angarsk, Novokuznetsk, Ivanovo, and a total of 28 cities.

## Six Million Residents

This is the number of workers who are now living in dormitories in the country. Therefore the question of what a dormitory should be like is a question about an important aspect of the way of life of millions of Soviet people.

During the past decade a good deal has been done to improve living conditions in the dormitories. First and foremost there has been a considerable reduction of the proportion of buildings that are constructed according to outdated designs. While in 1977-1978 they constituted one-third of all the dormitories constructed in the country, during the past 2 years they have comprised no more than 9 percent. The normative for dwelling space per one individual living in a dormitory has increased from 4.5 square meters to 6 square meters. The architectural arrangement of the dormitories has improved.

But still there are not enough dormitories. According to our rough estimates, the demand of industrial enterprises of the Russian Federation for dormitories is satisfied by an average of no more than three-fourths. The overall additional need for dormitories at industrial enterprises located on the territory of the RSFSR amount to enough space to accommodate approximately 500,000-600,000. Building them according to modern plans for dormitories of the hotel type will cost 800-900 million rubles.

A great deal depends on the imperfect planning of the startup of dormitories. Indeed, in the decree adopted by the USSR Council of Ministers and the AUCCTU as early as 1974, "On Measures for Further Improvement of Housing Conditions and Cultural and Domestic Service for Workers and Employees who live in dormitories," it is stipulated that the ministries are to assign a separate line in their annual and five-year plans for assignments for the startup of the overall capacity of dormitories. But in practice this decision is not being carried out by many ministries, which has a negative effect on the monitoring of the construction of dormitories as well. For example, the earmarked volumes of construction had not been fulfilled at every third enterprise that was inspected.

Moreover, in recent years there has been a tendency toward reduction both of the volumes of construction of workers' dormitories and of their proportion in the overall volume of departmental housing construction. For example, in enterprises and organizations under the jurisdiction of the RSFSR the introduction of dormitories at the beginning of the current five-year plan amounted to 90 percent of that in the corresponding period of the 10th Five-Year Plan.

Sometimes the managers of enterprises blame the shortage of funds for improving housing conditions. We should like to emphasize that just the unassimilated money from the fund for social and cultural measures and housing construction in the ministries under the jurisdiction of the RSFSR during the years of the 10th Five-Year Plan there remained about 500 million rubles, with which it would have been possible to construct dormitories to accommodate 300,000.

Today the well-constructed dormitory is an important factor in reducing labor turnover and improving the staffing of enterprises with workers. At the Yermolino Cotton Fabric Production Association, for example, full provision of dormitories for single workers and those with families helped the enterprise to overcome the shortage of personnel and to reduce turnover to two-thirds of the average level for the branch. And, conversely, at the Krasnoyarsk Cotton Fabric Combine, where there is a critical shortage of space in dormitories, the shortage of personnel amounts to 10 percent of the required number, and turnover is twice as high as the branch average.

In many modern well-built dormitories labor turnover among those who live there is no higher than 2-6 percent. But poor architectural arrangement and poor cultural and living conditions in the dormitories, as our questionnaire showed, reduces to five-eighths the number of people who commit their future to working at a given enterprise. Sometimes at one and the same enterprise labor turnover varies tenfold in various dormitories, depending on the level of architectural arrangement, educational work and the microclimate. This is the situation in dormitories of the Dyatkov crystal plant and the Bryansk Worsted Fabric Production Association.

It turns out that living in the dormitory in and of itself is not an automatic prerequisite for an essential reduction of labor turnover, and that this must be accompanied by work for creating a modern level of comfort in the dormitories.

#### How Does One Live in a Dormitory?

Residents of many dormitories answered this question for us. It turned out that half of those questions were not completely satisfied with the housing and domestic conditions (see table).

Reasons for Workers' Dissatisfaction With Living  
and Cultural-Domestic Conditions in Dormitories\*

Reasons for Dissatisfaction	All Those Questioned	Including Those Living in Dormitory	
		For Singles	For Small Families
Too many people living in one room	35.1	29.2	44.0
Noise, surroundings make it difficult to rest	33.6	23.8	48.2
Uncomfortable, not enough furniture	30.7	40.0	16.9
Unfavorable sanitary- hygienic conditions	29.6	28.5	31.4
No day rooms	24.4	21.1	29.2
Shortcomings in organization of meals	19.5	22.0	15.7
Unfavorable conditions for study and cultural leisure	16.4	19.7	9.5

\* Each person who responded indicated one or more of the reasons for dissatisfaction. Therefore the total of reasons is greater than the number of responses and amounts to more than 100 percent (percentages were calculated as ratio between those who gave the indicated reason and all who responded).

Let us begin with the fact that most of the dormitories are buildings of the corridor type with the typical amount of noise and community kitchens and shower rooms which are a long ways away from the rooms. Obviously, there is a need to reconstruct such dormitories and transform them into buildings of the sectional type. In order that enterprises which are thinking about convenient restructuring will not have to "invent the wheel" each time, it is necessary to have standard plans for the reconstruction of dormitories.

In dormitories there is an especially high demand for consumer services. But it is possible to send clothing and footwear out for repair or to send clothing for dry cleaning in only one out of every 20 dormitories that were investigated, and to send laundry out--in one out of every eight dormitories. In the majority of cases there are no points for renting household items. Yet experience shows that it is realistic to create these even in small dormitories. Thus in the dormitory of the Weaving Factory imeni P. Kaminskiy in Ivanovo Oblast each day during the evening hours a rental point is open and is manned by the person in charge of the dormitory. Here those who wish to can obtain television sets, tape recorders, record players, refrigerators, sewing machines and sports equipment.

If you have gotten hungry do not run out and look for a dining room or a snack bar in the dormitory. They do not exist in the majority of dormitories today. There are frequent cases in which there is not only no dining room or snack bar in the dormitory itself, but there are none in the neighborhood either. How do young dormitory residents have breakfast or dinner? After all, they usually do not try to prepare them themselves, for sometimes they simply do not have time to store up groceries for future use. And at 6 am, before the beginning of the shift, the stores are closed. The result is frequently what happens at the Khabarovsk cardboard and rubber plant, where the majority of workers have left because of their dissatisfaction with living conditions in the dormitory and the lack of a dining room or snack bar. One also frequently finds situations like that at the Kamyshin cotton fabric combine, where every third person who is questioned considers eating in the cafeteria of the dormitory somewhat dangerous to the health because of the poor quality of the food. But there are also positive examples. In the dormitories of the Ivanovo Spinning and Knitting Factory imeni Dzerzhinskiy and the Saratov Plant for Industrial Glass there are practically no people who are dissatisfied with the organization of public catering. The conclusion is simple--it is quite possible to solve this problem through the efforts of the enterprises themselves.

The shortage of furniture is a "sore spot" in many dormitories. In 60 percent of the dormitories that were investigated there was not enough furniture or it needed to be replaced. In every third dormitory there was not a complete set of stands and chairs, cabinets and tables.... Frequently this is brought about by the poor consumer services and the fact that the managers of

enterprises do not pay enough attention to this. But there are also other reasons. We have not yet organized mass production of furniture for dormitories according to special designs, which was to have been started as early as 1977. The Ministry of the Timber and Wood Processing Industry, to which this matter was entrusted, did not get started on time.

An important problem for residents of dormitories is the utilization of free time. These are mainly young people and hence they have a special interest in the possibilities of cultural leisure and sports. In the best dormitories broad possibilities are created for this. Thus in the dormitory of the Ivanovo Spinning and Knitting Factory imeni F. E. Dzerzhinskiy there are two public universities, the Raduga club, an orchestra of national instruments, a vocal group and a sports section. But at the same time there are other cases: in every fourth one of the dormitories that were investigated they had not created any clubs, associations for special interests, groups or sports sections. For example, in the dormitory of the Sverdlovsk ceramics plant for several months not a single mass cultural measure had been conducted. Can one really be surprised that (according to the Institute of Economics of the Ural Scientific Center of the USSR Academy of Sciences) a young female construction worker in a dormitory sits down at the table with a bottle of alcohol more than 60 times a year. Alcoholic beverages are abused even more frequently by her male contemporaries.

Those whose duty it is to organize the leisure of youth are not always the most highly qualified. Let us begin with some reference figures: 40 percent of the educators in dormitories do not have a pedagogical education, and more than half of them have a work tenure of less than 3 years. Labor turnover among the educators reaches 60 percent. And it is not at all simple to find an educator. For not a single one of the training institutions in the country trains them. The result is this: in every fifth dormitory the position of the educator is vacant. The Minvuz should take into account the fact that the dormitories need professional educators who know the specific nature of this work and can organize the training of these people.

And as long as there are no educators in many dormitories and poor conditions for cultural leisure there will be violations of discipline and order. Here are only two of many, unfortunately, examples: every seventh worker was evicted from the modern and quite well-arranged dormitory of the Nizhnetagil boiler and radiator plant for disturbing the peace during the year, and at the Kansk cotton fabric combine--every third worker.

The dormitories have not yet entered the sphere of the attention of cultural-educational and sports institutions everywhere. And yet they could help to organize in the dormitories the work of libraries, creative circles and sports sections, and organize here permanent information about all events of the cultural and sports life of the city, and they could also sell tickets for them right in the same place.

#### The Family in the Dormitory

In the dormitory--there is a wedding. But where will the young family live? The solution is for the young couple to live separately (of course,

temporarily--until they obtain an apartment) in dormitories of the hotel type. We are speaking about specialized dormitories which consist of small sections with all the conveniences, with several families consisting of two-three people living in each.

Practice shows that such dormitories help to reduce labor turnover among youth and to eliminate one of the main factors which impede the creation of a stable family. Buildings for young married couples help them to reduce expenditures of time on domestic needs: here it is possible to organize consumer service points and to open up cafeterias and dining rooms. Small spectator and sports halls enable them to expand the possibilities of leisure and this means to establish stronger comradely ties among the workers at a given enterprise. The creation of these buildings is required because of the demographic changes which are now being observed: married couples are becoming younger and there are more and more families among youth. While in 1970 men most frequently got married at age 25-29, in 1978--20-24 years of age. Women, as a rule, enter into marriage at an even younger age.

Each year an average of 11 percent of the people living in dormitories now create families. And in a number of them, for example at the Kamyshin cotton fabric combine, every third resident establishes a family during the year. These are leading enterprises and there has been a unique kind of chain of solutions to this problem: dormitories for single people--buildings for young families--apartments.

But there are still not enough buildings for young families. The majority of enterprises either do not have them at all or have a critical shortage of them. The questionnaire showed that this leads to a situation where the unfavorable housing conditions stand in the way of the creation of a family by every third worker who is living in the dormitories.

But what if the wedding takes place anyway? In this case, one-fourth of the young married couples are forced to leave the dormitory immediately to look for single rooms in the "private sector." Others continue to live separately--the husband in one dormitory and the wife in another, visiting one another depending on the mood of the person in charge, who has the right not to grant a pass for this kind of visit.

The development of a network of dormitories of the hotel type, including for young families, is envisioned by a number of decrees. But why are dormitories constructed mainly for people without families?

When solving the problem of what kind of dormitories to construct the management of the enterprise usually considers the main thing to be to accommodate as many people as possible. The arithmetic here is simple: by constructing a dormitory for single people it is possible to accommodate 400, but if the same money is used to construct a building for young married couples, it is possible to accommodate few more than 200 there (the others are members of their families). And so they construct dormitories for single people, forgetting that after they create a family young married couples can no longer live here and many of them, if they do not obtain an apartment or a place in a building for young families, leave the enterprise.

## How To Help Young Married Couples?

First of all it is necessary to "legitimize" buildings for young families and to give them a clear-cut normative and legal base. The provisions approved 10-15 years ago concerning dormitories and the sanitary rules for living in them need to be changed, primarily with respect to the fact that families are categorically forbidden to live in dormitories. This document should stipulate the conditions under which it is possible for single people and families to live in the same dormitories (for example, in different wings, floors or blocks), so as to combine the reasonable interests of both and also the actual possibilities.

The enterprises have long been waiting for special provisions concerning buildings for small families which determine the policy for their living, the normatives for dwelling space and staffs, the peculiarities of the organization of services, and the provision of furniture and equipment. So far there is no such document, and these problems are resolved by the enterprises at their own risk, frequently and far from the best way, and in violation of the instructions which are outdated, but for some reason still in effect.

Another problem is where to find the plan for a building for small families. For up to this point there are no standard plans for specialized buildings for small families which include premises for children's games and their work in small groups or for storing baby carriages and other things that go with family life. Apparently this is up to the USSR Gosstroy.

Finally, the force of inertia in the construction of dormitories should be overcome by the clients themselves--the ministries and enterprises. For a new situation has arisen now: the shortage of buildings for young families is critical everywhere, while there are more than enough places in dormitories for single people at many enterprises. This sometimes leads to a paradoxical situation. For example, the dormitory for single people of the Nizhnetagil boiler and radiator plant is less than half full while the building for small families of this same enterprise is extremely overcrowded. A study shows that the present shortage of dormitories is almost completely (four-fifths) a shortage of buildings for small families. HENCE THE CONCLUSION: ENVISION IN THE NEXT DECADE THE STARTUP OF MAINLY DORMITORIES OF THE HOTEL TYPE THAT ARE SUITABLE FOR YOUNG FAMILIES.

Buildings for small families are good if there are clear prospects for them to move into apartments. But so far every fourth family is not included on the waiting list for moving out of these buildings. It is even more difficult to get on the waiting list for an apartment if you have not yet started a family. In the dormitories for single people that were investigated, more than 80 percent of the youth are not on the waiting lists. Sometimes the directors of enterprises make unjustified limitations on this. People who are living in dormitories are placed on the list for obtaining housing only after they have started a family, when they have 10 years of work service at the enterprise and after they have reached 25-30 years of age. For example, at the Khabarovsk plant for heating equipment and the Irbit glass plant only

dormitory residents who are older than 30 can get on the list. And it is possible to be on the list itself for 10 years. You will agree that there is hardly anybody who will "put off" the creation of a family until they are 40.... One must recall that being put on the list for housing almost cuts in half the potential turnover of personnel among those who are living in dormitories. In order to take advantage of this reserve for retaining personnel, the enterprises should eliminate the aforementioned limitations (which are not envisioned by the existing "Rules for Accounting for Citizens Who Need Housing").

More extensive utilization of housing construction cooperatives can also help here. For it is with the help of these that one can make sure that the waiting periods for apartments for young families are not too long (one must recall that in addition to them the waiting lists include many permanent workers at the enterprises). The budget of the young working family usually makes it possible to make monthly contributions to the cooperative. Actually, many of them are now paying no small amount of money for private apartments. The difficulty is something else: where to get the money for the initial contribution?

The enterprise can render assistance here by granting part of the necessary sum from the fund for social and cultural measures and housing construction. Let us recall that this right is granted to the enterprises by the decree of the CPSU Central Committee, the USSR Council of Ministers and the AUCCTU, "On Further Strengthening of Labor Discipline and Reduction of Labor Turnover in the National Economy." They have skillfully taken advantage of this right at the Khabarovsk cardboard and rubber plant. More than 100 workers have received loans to enter housing construction cooperatives, which has appreciably alleviated the housing problem at the enterprise. But still this path is taken very rarely. Even the managers of enterprises themselves are frequently not aware of the policy and conditions for issuing money to enter housing construction cooperatives and are waiting for the corresponding clarifications.

Local soviets of people's deputies are capable of doing a great deal to improve housing conditions for young families. This includes primarily assistance to small enterprises which do not have enough money for independent construction of buildings for young married couples or for residential buildings. Local soviets could help in organizing shared construction of these buildings by several enterprises. As the experience of the "Orel Continuous Work" shows, the gorkispolkoms can play the role of a unified master of construction of departmental housing in the city, distributing it in proportion to the contributions of the enterprises.

Kiev workers also have some interesting experience. Along with the construction of dormitories for small families, here they have established a policy whereby, after registration of the marriage, the young families who have not been provided with dwelling space are placed on a separate list in the rayispolkoms and for several years, if they do not have a child, have the opportunity to obtain an apartment. Moreover, young families with children have benefits when entering the housing cooperative. Such measures of the

local soviets are especially important for workers of those organizations and institutions which are not carrying out their own housing construction.

The workers' dormitory today is the center of serious social and economic problems: labor turnover and discipline, and demographic, educational and moral problems. Quite a few good decisions have already been made regarding dormitories. The task now is to provide for their implementation. And the main thing is for the enterprises themselves to regard the dormitories as an important area for educational and economic work.

#### FOOTNOTE

1. SOVETSKAYA KUL'TURA, 8 January 1983.

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## CONSUMER SERVICE OFFICIAL INTERVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIIA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 150-155

[Interview with A. V. Tiys, deputy chief of Consumer Services Administration, by L. Shcherbakova: "Concern for Youth Buildings"]

[Text] Novosibirsk is one of the largest industrial centers of the country. Every third young worker in the city lives in youth dormitories. More than 140 enterprises and institutions that have dormitories organize educational work here. The work is well-arranged in the youth dormitories of the Sibakademstroy Construction Administration imeni 50-Letiye SSR. We are presenting to the readers a conversation with the deputy chief of the Consumer Service Administration, A. V. Tiys.

[Question] Aleksandr Vil'gel'movich, what sort of places in dormitories are provided for youth by Sibakademstroy?

[Answer] If you are speaking about providing youth with beds in dormitories, this is 100 percent for us. There are free places in dormitories today. Complete satisfaction of the demand for space in dormitories is a firm line which the administration management adheres to. You can judge for yourself how true we are to it. We hire 500-700 young people a year, and we are practically always in need of working hands. And in order to provide the proper construction base we think about where the young people will live. Many of those who have been recently hired need a place in the dormitory. It is precisely because we have space in the dormitories that young people come to us.

[Question] But a no less crucial youth problem is providing housing for young families. For the young men and women from your dormitories get married.... What does the administration offer them?

[Answer] Yes, this is indeed becoming a problem. Of course, it was difficult to come to a decision to have dormitories in the new buildings and we understood that this would lead to a reduction of the number of apartments for workers in other age categories, but we had no other choice. We have plans

for buildings of the hotel type only in brick. And we are adapting the ordinary panel buildings for dormitories. True, there are certain difficulties here. The organization of buildings for young workers with families is not provided for legally. According to the instructions of the deputy head sanitation physician of the USSR, it is prohibited to organize apartments for young families in residential buildings. We think that, taking the existing situation into account, this is an incorrect and outdated decision. The rayon councils are meeting us halfway after discussing the problem with the sanitary and epidemiological station of the fire protection service. A decisive argument in the discussion with representatives of these agencies is an excursion to the dormitory where two families are living in one room. Having seen this, members of the commission, as a rule, recognize that it is possible to use some of the apartments for young workers with families in an ordinary residential building. Now, for example, four of the six wings of a 216-apartment building that was made for construction workers have been allotted to young families.

But, in giving their consent the rayon agencies demand that we observe the normatives for dwelling space per one resident. So far in the country the norms for small families living in dormitories have not been regulated, and they are not envisioned in housing legislation. We are adhering to 4-6 square meters per person, that is, in a three-room apartment there are living, as a rule, two families and a maximum of seven people. We now have 594 apartments and 1,190 rooms in buildings for youth. There are 986 families living here. But according to the waiting lists, which we have, this is not enough. People who live here are receiving our orders and they are being taken into account on the list for granting apartments. We consider this dwelling space to be temporary.

[Question] You are probably striving for planned resettlement of the youth from the dormitories to dormitories for young families, and then to apartments.... Is this possible?

[Answer] Yes, we want what we call the "staircase" to be put into operation. When a young person comes to us he lives for a year or two in the dormitory. After he has a family (and young people are raising families at an earlier age now) he receives a room, and then--an apartment. We have not been able to achieve this fully yet. But even now we are orienting our subdivisions toward more efficient utilization of the housing that has been assigned to us. Thus in the mechanization administration, for example, young workers with families have been given 32 apartments and 84 rooms, in which 64 young families live. When distributing the apartments it is mandatory for them to move from the regular dormitory to the dormitory for young families, and from there--to the apartment.

But there is one more problem here. Since the order for the resident of such a dormitory is issued not by the rayispolkom, but by our housing construction office, he cannot change his room or have his mother, for example, move in with him. This sometimes places the residents in a difficult position.

[Question] Understandably, in construction organizations, especially such large ones as yours, the situation with housing is better. There are more

opportunities.... How long do small families have to wait now to move from the dormitory into an apartment?

[Answer] From 5 to 7 years, depending on the construction site at which our subdivisions are working. The release of the building for youth which we began to construct in 1984 will improve the situation. It consists of blocks which contain six rooms and a kitchen. In an added structure we wished to open up a dining room to accommodate 100-150. True, the time periods for its construction depend on the availability of working hands. If there were more people everything will be solved more easily.

[Question] But why are the workers' dormitories not constructed by the people who will live in them--the youth?

[Answer] A complicated question. It is necessary to think about it in an organized way. It is not a matter of youth, of finding the boys and girls who wish to do this. But nowadays construction technology and questions of technical safety are complicated and you cannot just ignore them. And in any event we would have to include this building in the construction plan, for otherwise where would we get the necessary materials?

It would be simpler and therefore more attractive for us to take another path--for those who will be living in the building to help the construction workers on the side. We have examples of this. For example, the construction of a 120-apartment building consisting of single-room apartments. We distributed these apartments ahead of time under the condition that the tenants would work on the construction for 100 norm-hours. Of course they did skilled and low-paid work, for there is a lot of this at the construction site. The people came themselves and brought their friends. The foreman kept track of the time worked. The order was issued after he had signed a document certifying that they had worked 100 norm-hours.

We released the children's combine the same way. We distributed the spaces in it and the subsidiary jobs were done by those parents whose children would enter the combine.

[Question] Aleksandr Vil'gel'movich, the number of youth dormitories, which has increased especially during the past 10-15 years, and the age of the people living in them (from 18 to 30) makes educational work in them very important. And it is carried out through the efforts of the enterprise. The enterprise itself educates its workers, and the social and industrial aspects of their activity are merging. What problems are you solving here? What are your "strategy and tactics" of education work in the workers' dormitory of Sibakademstroy?

[Answer] We consider it of principle importance to arrange things in such a way that educational work in the dormitories and the activity of the dormitory are generally evaluated against the background of summing up the results of the work of the production collective. Each quarter in the house of culture in festive circumstances the Challenge Red Banner and certificates are awarded to the best production subdivision and the best dormitory. Bonuses are also awarded--100-200 rubles to the winning dormitory--and about 1,000 rubles to

the winning subdivision. And the state of affairs in the dormitory is taken into account when summing up the results of the competition of subdivisions.

Every worker of the administration must know that youth affairs are no less important to the management than purely production affairs are. The more so since it is almost impossible to separate them. We are constantly emphasizing this at evening gatherings devoted to questions and answers of residents of dormitories and the management of the administration. How is educational work organized in our dormitories? First of all we take into account the fact that representatives of the older generation do not live in youth-labor dormitories and this means that their educational influence is lacking. Therefore a great deal of significance is attached to patronage of dormitories of production subdivisions. The patron-mentors do not always take the proper attitude toward this matter. Therefore we are deliberately providing incentives for competition among patrons, and constantly comparing them publicly in the dormitories. The patrons are helping us in especially difficult cases as well. For the rayispolkom is always sending young people who are in need of correction to work in the administration. I wish to say immediately that we have no legal violations in the dormitories but we have not yet managed to deal with the heavy drinking.

As everywhere else, we have organized dormitory councils which solve all problems of living in them.

[Question] And how is the age composition of the people living in the dormitories taken into account?

[Answer] The dormitory is home for the young people who live in it. A young person should have here all the necessary conditions for studying, for receiving guests, and for amateur and sports activities. We are making special rooms for these activities. If somebody's parents come to see them on their day off they stay in the guest room. In the lecture rooms which are a part of the dormitories we raise subjects that are interesting to youth. We attach a great deal of significance to the development of sports. Each dormitory has special facilities for tennis, weight lifting, chess and other kinds of sports. There is also a hunting club with a firing range which is beautifully decorated with stuffed animals.

As a rule, the traditional youth festivals on the shore of the Ob Sea are interesting. We have already held 11 of them.

Now about dormitories for young workers with small families. We have 230 young people in just one of them. Therefore the center of gravity of the work is shifting to the organization of leisure for the young people. To this end we are organizing clubs for various ages in the places of residence. Here one can leave a child if one has to run to the store, and it is also interesting for older children here. We hold classes for parents here as well. Premises have been assigned for festive teas and meetings around the samovar.

[Question] The effect of this work probably depends primarily on the people who engage in it. Is the professional level of the educators in your dormitories adequate?

[Answer] Not always. Of course we try as hard as we can to help the educators. We give them the opportunity to communicate with colleagues from other cities and also with colleagues from Novosibirsk. They have gleaned a lot that is good, for example, from their colleagues in Dzerzhinskiy Rayon in Novosibirsk. But the difficulty is that the wages of this category of people is low and their material interest in the results of their labor is also low. Yet the importance of educational work in the dormitories is increasing along with the increase in the number of young people who are living there.

The duties of the educator include:

studying the interests and needs of the people living in the dormitory and planning and conducting political-educational and mass cultural work;

exercising control over the creation of conditions in the dormitory which are necessary for the study and rest of the people who are living there;

contributing to increasing the public activity and the general educational, political and cultural level of the people living in the dormitory;

organizing mass sports work with the people living in the dormitory, and so forth.

I should also like to mention the provision of furniture. The decision of the USSR Gosplan, Gosstroy and Ministry of Finance to revise the normative for the value of furniture, bedding and other equipment in the rooms per one resident was very timely. Now this normative amounts to 277 rubles, 33 kopeks, that is, almost twice as much. For it is nice after a hard day's work to come into a comfortable, attractive room. Of course we are doing a great deal through our own efforts, ordering furniture (bedboards and nightstands) for our SGPTU. We are now working harder on improving the equipment, for our dormitories and think that it is time to revise the limits. The dormitory--the home of the young people--should be comfortable.

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## SOURCES OF WORKTIME LOSSES REVEALED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 156-162

[Article by Yu. P. Sosin (Krasnoyarsk: "Working Time: Sources of Losses")]

[Text] In Krasnoyarsk Kray during 1981-1990 it is earmarked to increase the output of products by 60-65 percent.<sup>1</sup> In order to carry out this task it will be necessary to significantly increase the number of workers, and half of this increase will be work stations for enterprises of the Sayansk fuel and energy complex and the Kansk-Achinsk TPK. The need for additional construction workers under the 11th Five-Year Plan alone is equal to 40 percent of the number at the beginning of 1981, and also 30 percent more agricultural workers will be needed. The need for engineering and technical personnel even in 1980 was estimated at 11,000 people. It was necessary to enlist more than 1,000 software specialists for servicing the electronic computers in the kray. More and more skilled personnel are needed in administration, public health and trade.<sup>2</sup> The natural growth of labor resources will produce approximately 20,000-25,000 people a year,<sup>3</sup> which is much less than are needed, and we cannot count on external resources. More than 95 percent of the labor resources in the kray are either working or studying. The balance of the labor force is becoming increasingly drained. Hence the task of revealing and utilizing such reserves as efficient utilization of working time. If it is put into action, will the disparity between the number of jobs and the number of workers be eliminated? In order to answer questions like this the kray committee of the CPSU, with the help of a large group of specialists, analyzed in detail the utilization of the labor potential during 1971-1981 in six branches of the kray's economy. They study the official reports, the data from one-time investigations of the utilization of equipment and working time, and the condition and nature of labor turnover. They questioned 10,000 workers.

The results of the analysis show that the shortage of labor force is combined with insufficiently effective utilization of it. Yet the dynamics seemed to look very promising. Thus the losses of working time during the preceding decade per one worker decreased in industry from 15.5 to 14.6 man-days, and in construction--from 15.2 to 13.7. This is a positive tendency. But the absolute losses increased. Taking labor turnover into account, we fail to take advantage of the labor of tens of thousands of workers each year. Hence

the losses in the production of products as well. Moreover, far from all losses are taken into account, and those that are taken into account are not always reliably reflected, for example, entire-day and intrashift idle time, truancy and short leaves. But even the existing information tells us a great deal. Especially if it is augmented with figures like these: the output-capital ratio in 1981 was 30 percent less than in 1971 and the ratios between the annual rates of increase in labor productivity (in the numerator) and output-capital ratio (in the denominator) amounted to in 1970--98.9 percent, 1976--98.6 percent and in 1982--94.8 percent.

Most of the losses of working time were losses due to illness. Party, trade union and management agencies have done a considerable amount of work in this area. During 1975-1982 alone more than 500 million rubles were spent on implementing comprehensive plans for improving conditions, protection of labor and sanitary and health measures. This made it possible to transfer more than 30,000 people from heavy manual labor to mechanized labor, and to create for 145,000 workers an environment in which the air meets all sanitary and hygienic requirements. An especially great deal has been done at the Norilsk mining and metallurgical combine, at enterprises of the textile, light, chemical and petrochemical industry and in ferrous metallurgy. The results were not slow in manifesting themselves. Industrial injuries in the kray had dropped by 38 percent in 1982 as compared to 1975, and losses of working time because of accidents--by 21 percent. The positive changes can be seen. But the problem has still not been completely solved. We need additional resources and we need to distribute and utilize them intelligently.

An appreciable part of the illnesses were brought about by production conditions. Unsatisfactory sanitary and hygienic conditions for labor give rise to increased labor turnover and reduce labor productivity. In order to reveal the reasons for dissatisfaction with work because of the aforementioned factors, they conducted a questionnaire of the workers. In first place was the large volume of manual labor (37.7 percent of those questioned), then came drafty rooms (27.2 percent), in third place were dust and air pollution (13.7 percent) and the rest of the characteristics of the working conditions received from 5.5 percent (high humidity) to 0.9 percent (vibrations).

The following concrete goal suggests itself: before the end of the current five-year plan to reduce illness related to working conditions by 7.5-9 percent. Reaching this goal will make it possible to increase labor productivity in industry alone by more than 3 percent.

Party, trade union and Komsomol organizations as well as management units are conducting a considerable amount of work for strengthening labor discipline. There are certain positive results: in 1981 as compared to 1971 the number of absences per one worker in industry decreased by 9.1 percent. But the result that has been achieved, frankly, does not meet the demands of the time. In 1981 as compared to 1971 losses of working time for this reason had increased by 10.5 percent in industry, and in construction just during the past 5 years--by 49.2 percent.

Absences have caused no small amount of economic harm: on an annual average, just because of absences that are not recorded, the kray's national economy

fails to produce tens of millions of rubles' worth of industrial products and fails to carry out several million rubles' worth of construction and installation work. There are many reasons for this, and particularly outlays for organizational and educational work.

Economic managers have sometimes abused administrative punishment, and trade union and Komsomol organizations have not fully taken advantage of measures for social influence, which are more effective than administrative ones. Still, the attitude of the workers toward measures for influencing violators of labor discipline is this: 44.9 percent of those questioned consider measures of material punishment to be effective; 43.7 percent--discussion at meetings of the brigade, shift or section; 8.1 percent--the comrades' courts, and 3.3 percent--public disclosure of punishments.

So far 36.7 percent of the industrial workers are still engaged in manual labor. It is precisely here that one finds one of the most important reasons for absences. When responding, for example, to the question on the questionnaire "What can you say about your work?", only 7.4 percent of those who were performing manual labor said that it was "interesting and they liked it," and 65.4 percent indicated that they were "indifferent toward." Those who were questioned said directly that they did not like the work they do precisely because of the large volume of manual labor, the not altogether favorable conditions, the low wages, and so forth.

It is also necessary to take subjective aspects into account. These include personal disorganization, sometimes simply slovenliness, generated by the high demand for labor force; 90 percent of all the violations of labor discipline and public order were directly or indirectly related to drunkenness or its consequences. There are also simply loafers and people who are indifferent to the affairs of their collective and who ignore their basic civic duties.

In responding to the question of what needs to be done to eliminate losses of working time, 28.6 percent of the workers who were questioned said: "Strengthen labor discipline." They put this factor in first place. And the more mature the worker becomes, the more deeply he understands the significance of the problem. Thus the following indicated the need to strengthen labor discipline: workers' with up to 1 year of service--21 percent; up to 2 years--24.9 percent; up to 4 years--28.8 percent; up to 9 years--30.9 percent; and up to 15 years--33.7 percent.

Among the reasons for losses of working time was the failure to show up at work with the permission of the administration. Because of the implementation of a number of measures for coordinating the work schedule of enterprises of the sphere of services with the free time of the workers, it has been possible to achieve certain progress: the number of leaves with the permission of the administration per one worker in industry dropped by 47.1 percent, and in construction--by 47.4 percent. During 1983 losses for this reason were reduced by another 25.7 percent. But, as before, this reason accounts for the losses of working time of more than 1,800 workers each year. Some part of these losses in general cannot be eliminated. But it is difficult to say exactly how large a part. The factors which cause workers at enterprises and construction sites to do their personal business during working time have not

been studied either in the labor division of the krayispolkom or in the branch of the Scientific Research Institute of Labor.

Entire-day and intrashift idle time, if one proceeds from the official statistics, account for approximately 35 percent of the overall volume of losses, not counting losses because of illness. According to report data, these losses remained the same throughout the entire period that was analyzed--0.6 man-days per worker per year. But because of the increased number of personnel and the greater labor productivity, losses have increased by approximately one-fifth, and the quantity of products that were not produced under the 10th Five-Year Plan more than doubled. Moreover, at many enterprises entire-day and intrashift losses of time are not accounted for satisfactorily, and they are either shown as minimal or they are not shown at all. According to data from daily observations of the utilization of metal-cutting equipment and the time of workers, which were conducted by the kray statistical administration, intrashift losses of time reached 15-20 percent. This is confirmed by data from a sociological investigation as well: 64.6 percent of the workers who were questioned indicated the lack of uniformity of the workload and idle time; 17.4 percent--the lack of work for 15 minutes of the time during the shifts; 27.7 percent--30 minutes; 11.9 percent--45 minutes; 11.8 percent--1 hour, and 31.3 percent--more than an hour and a half.

When the workers were asked what caused the idle time lasting 1-1.5 hours, every sixth one (in machine building--every fifth one, and among transportation workers--every fourth one) named the lack of blanks, materials and parts and the time necessary to go for them; every ninth--the lack of provision with instruments; and every eighth--waiting for equipment to be repaired. More than 70 percent of the entire-day and 80 percent of the intrashift idle time is because of organizational and technical problems. The inadequate training of line managers also plays a role here. In this respect, the answers to the question "Do your immediate supervisors organize your work correctly?" were interesting. About one-third (32.7 percent) answered in the affirmative, 42.2 percent--"not completely," 10.1 percent--"no," and 9 percent--"I do not know."

More than 1.5 million new workers have been trained during the past 10 years, including 288,100 in the system of vocational and technical education. The dynamics are interesting. Thus while during 1971 120,000 new workers were trained, including 22,500 in the system of vocational and technical education, in 1981 these figures were 172,000 and 29,500, respectively. During this same period more than 3 million workers increased their qualifications. But there were also many omissions. So far the kray does not have an integrated system of training and increasing qualifications of personnel which provides for professional growth of the workers, and this gives rise to a lack of balance between the needs of production and the occupational and skill capabilities of the labor force. Inadequately trained workers utilize highly productive equipment inefficiently, which gives rise to idle time and losses of working time.

The suggestions for eliminating losses which were made by the workers who were questioned are presented below (see table).

Answers to Question "What Must Be Done To Eliminate Losses  
of Work Time?", % of those questioned

What Must Be Done?	Answered, %
Strengthen labor discipline	29.4
Raise level of professional and economic knowledge of workers	19.7
Improve: Production management	2.1
Labor organization	2.4
Working conditions	4.8
Repair and service of equipment	5.0
Supply of basic materials, blanks and semimanufactured products	5.7
Supply of instruments and auxiliary materials	7.4
Means of transportation	4.8
System of wages	18.8

From the table one can see that the struggle for efficient utilization of working time must be waged in all directions and that a comprehensive approach is needed. This would seem to be a trivial conclusion but this approach is not always observed, it must be emphasized again. Moreover, the immediate tasks are also obvious, particularly the strengthening of labor discipline. But losses of working time dropped by 20 percent in 1983 as compared to 1982, and the number of absences--by 7.1 percent. The amount of idle time decreased by 30.8 percent, which is tantamount to producing more than 10 million rubles' worth of additional products.

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## SCIENTIFIC MANAGEMENT THEORY DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 164-172

[Article by Yu. A. Lavrikov, doctor of economic sciences, and E. B. Koritskiy, candidate of economic sciences, Leningrad Finance and Economics Institute imeni N. A. Voznesenskiy: "Scientific Organization of Labor and Theory of Production Management"]

[Text] Even during the first years of Soviet power problems of management of the national economy drew the constant attention of scientists and management workers. Immediately after the changeover to peacetime construction, an extensive movement for scientific organization of labor (NOT) got under way in our country, and the Soviet science of management originated and developed within its framework. Prerevolutionary Russia had no scientific institutions which engaged in problems of production management, and therefore in the first steps of Soviet management scientists were directed toward a critical study of one experience in management and the gathering of factual material which was necessary for theoretical generalizations. On the recommendation of V. I. Lenin, many Soviet specialists (A. K. Gastev, P. M. Kerzhentsev, Ye. F. Rozmirovich, I. M. Burdyanskiy and others) went on trips abroad in order to become familiar with the arrangement of NOT and the streamlining of management in capitalist countries.

The process of accumulating knowledge about NOT and management took place extremely intensively, and soon there was a need for collective exchange of opinions. In January 1921 in Moscow the First All-Russian Initiative Conference on Scientific Organization of Labor and Production<sup>1</sup> was convened. It was after this that the Soviet theory of management began to develop rapidly and the first scientific schools were formed.

The establishment of the Soviet science of management took place under the difficult historical conditions of the restoration and reconstruction periods. While there was critical shortage of resources, it was demanded that science develop first and foremost recommendations on how to obtain the maximum production effect with the least possible expenditure of time and material and monetary funds. Most of the work of these years was devoted to such problems as efficient organization of the work station, improvement of the structure of the management staff, simplification of business correspondence, the creation

of simple and inexpensive methods of reporting and accountability, improvement of planning, control over the fulfillment of assignments, and so forth.

Applied research was conducted along with general theoretical research, and after the first conference the heated disputes among proponents of various points of view became extremely broad in scope. The disputes involved the very concept of management, its scale, the need for a special science of management, the nature of this science, its subject and so forth. The Second All-Union Conference on NOT, whose main initiator and organizer was V. V. Kuybyshev, had to put an end to the disputes.

Several weeks before the conference two of the more popular concepts of scientific organization of labor were presented in the press. One of them (the so-called "17th Platform") was reflected in the position of P. M. Kerzhentsev, I. M. Burdyanskiy, M. P. Rudakov and other eminent activists of the NOT movement, and the other--the "Group of Four"--presented the views of the eminent Soviet scholar A. K. Gastev and his followers.

The former were in favor of extensive theoretical generalizations in the area of NOT and management, a national economic approach to organizational problems, and extensive enlistment of the masses in the work for NOT through various lower cells, circles and societies. Reproaching A. K. Gastev and his inadequate attention to problems of organization of associations of people, they insisted on in-depth theoretical study of them. Thinking that there are common features in any kinds of work related to management of people, the ideological leader of the "Platform of 17," P. M. Kerzhentsev and his followers essentially anticipated the main idea of praxiology,<sup>2</sup> to be sure, with respect only to organizational activity.

In opposition to the views of the "Group of 17," A. K. Gastev and his colleagues warned of the danger of excessive theorizing and accused their opponents of "having their heads in the clouds," being separated from practice, and in the heat of the polemics they called the theoretical judgments of their opponents "NOT banter." They thought that it was necessary to deal primarily with practical issues and to begin all work on scientific organization of labor and management with a determination of the weakest places, with organizing the labor of an individual person, and with streamlining of labor operations. Herein lies the essence of the Gastev approach from the position of a "narrow base."

Having analyzed these views carefully, V. V. Kuybyshev came to the conclusion that the differences between them were not irreconcilable. Having joined together the positive developments of both sides, he developed his own platform which was free of the claims to exclusivity which were inherent in both of the competing trends. This was the concept that V. V. Kuybyshev introduced at the second conference.

The Second All-Union Conference took place in March 1924 in Moscow and comprised seven sections. The section on management was the largest one, which showed the increasing interest in management problems. A great deal of attention was paid to methods of streamlining the state apparatus, business correspondence, accountability and other practical problems. The slogan under

which the conference took place was extremely remarkable: "In connection with life, for life, and not separate from life."

The Second All-Union Conference unanimously approved the Kuybyshev definition of NOT, which was also registered in a resolution of this representative forum. It said: "NOT should be understood as a process of introducing into the existing organization of labor the improvements achieved by science and practice which increase the overall productivity of labor."<sup>3</sup>

According to this definition, scientific organization of labor was understood primarily as a streamlining activity in the area of organization of labor and management. This emphasis caused individual modern authors to evaluate the entire formulation as erroneous. They thought it impeded the development of theoretical issues and therefore was a step backward.<sup>4</sup> Of course, one cannot agree with such an evaluation, made from the position of the present day and not taking into account the specific features of that stage of socialist construction. Here it is appropriate to recall the words of G. M. Krzhizhanovskiy: "The difficulty of historical research consists, among other things, in not being too wise through 'hindsight'. It is necessary to be able to place people and events in their true position, strictly taking into account the dialectic of life."

The interpretation of NOT proposed by the Second Conference was determined by economic conditions, and they required a strict regime of economy, which could be maintained only by continuous streamlining of labor, production and management. The conference pursued primarily the goal of orienting NOT toward the satisfaction of real practical needs. V. V. Kuybyshev said: "...A little more practical work, a little more healthy feeling for reality, and a little less theorizing which is separated from life."<sup>5</sup>

The policy of streamlining which was developed by the Second Conference corresponded to the spirit of the time, and this was confirmed by the subsequent party evaluation. "The general position toward industrialization of our country," emphasized the 15th Congress of the All-Russian Communist Party (of Bolsheviks), "should be accompanied by a decisive course toward streamlining of production and management. Streamlining of production along with improvement and simplification of the state and cooperative staff is a key task in the forthcoming period."<sup>6</sup>

All this certainly does not mean that theoretical and methodological research has been rejected as unnecessary. Only the scholastic constructions that were severed from life were rejected. Eminent Soviet scientists continued to combine practical research with theoretical generalizations, thus formulating original concepts. Thus after the Second Conference they formulated the theoretical trend which was very close to the school of A. Gastev. The founder of the new trend which came to be called "an industrial interpretation of management processes" in literature, was Ye. F. Rozmirovich (Troyanovskaya), according to V. I. Lenin's estimates an eminent worker who was very valuable to the party.<sup>7</sup>

The initial point of the concept was the provision concerning the existence of common features in the production and management processes. The common

features were seen in the fact that, in the first place, in production and management activity there is an interaction of the same element (raw materials, implements of labor and labor force); in the second place, the structure of the production and management units is based on the same principles. Improvement and automation of production lead to a situation in which the labor of workers who control machines (management of things) is reduced to a number of the simplest movements for regulating their operations. And since the management processes (control of people) are analogous to production processes, they too can be broken down into their constituent parts ahead of time, calculated and mechanized.

This direction of research is extremely crucial even today. A study of the management process as an organic part of the production process has created a methodological basis for considering management as a function which does not oppose production, but is immanent in it.

But Ye. F. Rozmirovich was not able to avoid mistakes either. The main one of them was not his proclamation of the technical approach to management, but the fact that he declared other possible approaches to be false and unscientific. Such a hypertrophy meant forgetting about the socioeconomic nature of the management of production. The creation of automatic conveyors was somehow supposed to lead to a situation in which "no" managers of people were needed and that the management would be carried out by the machines themselves. Thus Ye. F. Rozmirovich, along with the development of technical equipment, "abolished" the management of people.

A principally different position was held by N. A. Vitke, an RKI official. He thought that management consists in an expedient combination of human wills (certainly not intellects) and through them--various implements for achieving particular goals that are inherent in the given organization. "The manager," he explained, "is primarily a social technician or engineer...a builder of human relations." The entire essence of management work consists in creating in the collectives a favorable sociopsychological atmosphere, the so-called "spirit of the beehive."

Thus N. A. Vitke absolutized the sociopsychological aspect, placing "in the background" the economic, political and other aspects of the management of production.

After the Second Conference other concepts of economic management were also formulated. Among them were the functional-economic interpretation of I. M. Burdyanskiy, the organizational-production interpretation of B. Ya. Katsenbogen, the theory of the "physiological optimum" of O. Ya. Yerminskiy, the psychotechnical approach of I. N. Shpil'reyn and K. K. Kekcheyev, and many others.

Thus as early as the 1920's-1950's many of the presently existing approaches to management were originated (economic, social, technical), but they far from always took into account the complexity and the many aspects of production management and there were cases of absolutization of one aspect of it or another, and therefore the scientific polemics sometimes reminded one of a "dialogue of the deaf."

In the 1960's-1970's the problem of management of public production became so popular that it more and more frequently came to be called the "problem of the age." In the USSR during 1965-1975 alone 760 books and pamphlets and about 3,000 articles were published on questions of management.

What makes this problem so crucial under modern conditions? Briefly, it is the command of the time. The society cannot allow itself the immense expenditures of material funds and intellectual forces in order to solve problems which would not have arisen if the organization of management had been better. A decisive improvement in production management in the stage of developed socialism has become a central part of the party's economic policy, which was reflected in the documents of the 24, 25th and 26th CPSU congresses, in the decisions of the plenums of the CPSU Central Committee, and the decrees of the party and government (of 30 December 1965, of 12 July 1979, and others). "The party is also raising with all possible emphasis the problem of developing improvement of management of the economy on a broad front and restructuring the economic mechanism," said Comrade K. U. Chernenko in his meeting with the electorate on 2 March 1984.

The growth of the role of management in the modern stage has predetermined a qualitative leap in the development of the theory of management. In the 1970's-1980's large research monographs appeared by L. I. Abalkin, A. G. Aganbegyan, R. A. Belousov, P. G. Bunich, O. A. Deyneko, S. Ye. Kamenitser, O. V. Kozlova, D. M. Kruk, V. I. Oligin-Nesterov, A. M. Omarov, G. Kh. Popov, D. I. Pravdin, F. M. Rusinov, I. I. Sigov, V. N. Cherkovets and many other Soviet scientists, in which they substantiated the many aspects of the management of production. The comprehensive concept of the mechanism of economic management which has been developed in the modern stage is a large achievement of Soviet management thought. Regarding this, G. Kh. Popov correctly notes that "in opposition to the previously reigning various variants of economic, legal, cybernetic and other kinds of characteristics of management, in opposition to the denials of the independent significance of problems of management, there appeared and is successfully developing a comprehensive approach to the analysis of this complex social phenomenon."<sup>9</sup>

It is necessary to take a synthetic approach to the management of production, one which encompasses the broad spectrum of relations and interactions of all elements and economic ties. Their number is immense. Therefore they must be grouped together in the form of subsystems and blocks, and the model of economic management can best be expressed in the form of a system which includes subsystems that interact with one another. They can be divided into: 1) economic, 2) social, 3) organizational-technical subsystems.

Each of these subsystems, in turn, consists of blocks of elements. Thus the central unit, the core of the economic subsystem, like that of the entire management mechanism, is planning in the broad sense of the work, including prognostication, preplanning calculations, development of production programs, long-term and current operational production plans on the basis of normatives, standards, prices, balances, indicators and so forth. Planning is the main level for implementing the party's economic policy. Another important block of the economic subsystem--cost accounting (khozraschet) incentive--is

combined with planning and includes forms and systems of wages, bonuses, fines and so forth. The mechanism for cost accounting incentives should contribute to the fulfillment of plans and, which is important to emphasize, should be based on planned assignments and the system of long-term economic normatives.

The next structural block is the organizational structure of management. This form of division of labor in the sphere of management envisions the creation of a certain number of management agencies with a particular composition, and the establishment of their hierarchy and reciprocal ties.

The social subsystem of the mechanism of economic management is also differentiated. Its most important element is prediction and planning of social development, including political measures, and socioeducational, domestic and other factors. It is also possible to single out such elements of the social subsystem as moral incentives and responsibility, and administrative-legal and psychological methods of management.

Finally, the third subsystem--organizational-technological--includes substantial (means and objects of management labor) and personal (personnel) factors in management of the economy. This subsystem provides for normal, continuous operation of the entire management mechanism as a whole and individual components.

The very structure of the mechanism for economic management presupposes that an investigation of it should be carried out both from a differentiated position (a study of individual concrete aspects, sides and facets of management) and an integrated, synthetic approach, which envisions the interconnection of all elements, blocks and subsystems, their "junctures and their interweaving."

History convincingly shows that fruitful development of the science of management cannot be based on absolutization of one aspect or another or one or another subsystem of management. There is no reasonable alternative to close cooperation, to a union of all possible approaches to the study of management. In particular, for successful development of the theory of management it is necessary to have a rational combination of applied developments and theoretical-methodological research.

Going too far in one direction or another will inevitably begin to impede the development of both science and practice.

#### FOOTNOTES

1. For more detail regarding this see: Koritskiy, E. B., "At the Sources of Scientific Organization of Labor," EKO, No 5, 1981., pp 80-90.
2. Praxiology is the general theory of rational human activities. See, for example: Kotarbinskiy, G. "Traktat o Khoroshey Rabote" [PA Treatise on Good Work], Moscow, "Ekonomika," 1975.
3. "Nauchnaya Organizatsiya Truda i Upravleniya" [Scientific Organization of Labor and Management], Moscow, 1965, p 29.

4. See, for example: Berkevich, D. M., "Formirovaniye Nauki Upravleniya Proizvodstvom" [Formation of the Science of Production Management, Moscow, 1973, pp 117-118.
5. "Nauchnaya Organizatsiya Truda Dvadtsatykh Godov. Sbornik Dokumentov i Materialov" [Scientific Organization of Labor of the 1920's. Collection of Documents and Materials], Kazan, 1965, p 304.
6. "The CPSU in Resolutions and Decisions of Congresses, Conferences and Plenums of the Central Committee," Vol 4, Moscow, 1970, p 18.
7. Lenin, V. I., "Poln. Sobr. Soch." [Complete Collected Works], Vol 52, pp 132-133.
8. See: Lavrikov, Yu. A., Koritskiy, E. B., "Problemy Razvitiya Teorii Upravleniya Sotsialisticheskim Proizvodstvom" [Problems of the Development of the Theory of Management of Socialist Production], Leningrad, Izd. LGU, 1982, p 27, 1984.
9. See "Organizatsiya Upravleniya" [Organization of Management, Moscow, 1974, p 50.

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## RECYCLING OF USED LUBRICANTS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 173-175

[Article by Yu. V. Darinskiy, candidate of technical sciences, V. Ye. Larin, (Norilsk), M. T. Tishchenko, (Krasnoyarsk), and V. A. Shkarenko, candidate of technical sciences (Leningrad): "Used Oils Can Cost One-Tenth As Much"]

[Text] The generally accepted method of lubricating internal combustion engines (DVS) is based on periodic replacement of the used oil with fresh oil. The operational properties of motor oils, including synthetic ones, are thus increased as a result of increasing their initial concentrations of additives or components of them.

Yet a number of research projects and our own 10 years of experience in operating diesel engines under the conditions of the North confirm that the youth of oils with a high content of additives for lubrication by the traditional method and the synthesis of new additives and motor oils are inefficient from the technical and economic standpoint since they preclude the possibility of increasing the service life of commercial oils at least 1.5-2-fold under the condition that the cost of oil remains at the present level.

As early as 1968 our country knew of a new method of lubricating DVS's which was based on periodically introducing additives directly into the engine's lubrication system. It was based on the idea of maintaining a certain concentration of additives in the oil without replacing the oil. In practice this method is so simple that it is elementary (for example, for six Ch 12-14 diesels--by manual or automatic addition of 0.3 kilograms of VNII NP-360 additive every 100 motor hours].

Then the service life of the oil before it is replaced is increased 5-10-fold.

It should be emphasized that in various branches of industry, both in our country and abroad, the extensive use methods and devices which make it possible to stabilize the properties of various solutions by adding to them certain quantities of chemical reagents. The introduction of similar devices for lubricating systems for DVS's and other machines and mechanisms which operate with the application of lubricants with additives, in our opinion, would make it possible to reduce to one-fifth-one-tenth and less the quantity

of oil that is used in the country, to reduce irretrievable losses of it, and also to prevent pollution of the environment.

Mathematical means are being used for an objective and reliable estimate of the capacities of motor oils and a determination of the time period for their replacement, and attempts are being made to create mathematical models of the main processes of aging of oils that are being used. The authors have developed an adaptive mathematical formula of the process of discharging additives and accumulating mechanical impurities in the oil that is being used, which makes it possible to synthesize an algorithm for the optimal control of the lubrication conditions. As a result various conditions can be selected for introducing additives (continuous or periodic).

In order to establish the adequacy of the model to the real process, a computer was used to calculate the theoretical values of the periodicity and the quantity of additive that was introduced, and also to compare them with the experimental data that were obtained during the period of stand testings of diesel engines. The analysis of the results that were obtained shows a sufficiently high degree of coincidence of the theoretical values with the analogous amounts that were retained experimentally. This shows the possibility of utilizing the model for practical calculations of lubrication schedules by utilizing computer equipment. The application of the model precludes many years of labor-intensive laboratory, stand and operational testing.

The proposed method becomes even more significant because fuel with an increased sulfur content is used in DVS. When operating diesels with fuel that contains sulfur in larger quantities than were previously allowed, it is recommended that the oil be changed 2-4 times more frequently than is required according to the instructions. It is possible this problem in a fundamental reduced-waste and the waste-free technologies, that preclude discharging harmful substances into the atmosphere, the soil or bodies of water, and the utilization of these would provide for a leap in the technical and economic indicators. The results of the introduction of the method of "waste-free operation of the DVS (s) for DGA-48M diesel generators in northern facilities confirm the high effectiveness of the method. In addition to reducing the quantity of used oil to one-fifth to one-tenth the previous amount, the service life of the diesel engines was increased 1.3-1.5-fold, labor expenditures on technical servicing decreased to two-thirds the previous amount, and the economic effect amounted to about 1,000 rubles a year per one diesel of the 6 Ch. 12-14 type.

The problem of waste-free operations of DVS's is especially crucial in regions of the country which are rapidly being assimilated but are hard to get to. The polar region, the Far North and the Far East in Paris--since the collection and regeneration of used oils are technically impossible and inexpedient here. Moreover, the North is one of the worst areas on the planet from the ecological standpoint. Consequently the problem of preventing pollution of the environment through extensive introduction of methods of

"waste-free operation of DVS," in our opinion, should be solved first and foremost in the North.

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## CONSOLIDATION OF INSPECTION AGENCIES RECOMMENDED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 175-178

[Article by E. B. Gurskiy, economist (Novosibirsk): "Instead of a Multitude of Inspection Agencies--One"]

[Text] Local control over the financial and economic activity of the enterprise, institution or organization is provided by the head bookkeeper. The number of violations of state, planning and financial discipline which are revealed as a result of inspections depends largely on how he carries out the functions of a state controller. And the head bookkeeper is held mainly responsible for violations although the violations are committed by the planning division, the division for labor and wages, and so forth. In order to improve local control and unify the approach, it may be worthwhile to think about placing a larger number of economic subdivisions under the jurisdiction of the head bookkeeper.

Secondary control is provided annually by departmental inspectors in economic agencies, and once or twice a year in the budget institutions. These inspections are not effective enough. As a rule, they are superficial. First of all, this is the result of the small number of departmental inspectors. At one time there was no additional limit for the expansion of department control and inspection services. But even the small organization chart is most frequently not filled.

Our VUZes have no special training for inspectors and, moreover, the institutes of the national economy and finance and economics institutes train personnel mainly for financial and bank agencies. The position of the departmental inspector is a lot of trouble: many business trips and a large load. For example, inspectors of the Siberian branch of the USSR national economy must annually inspect more than 50 institutions, enterprises and organizations of 12 branches of the national economy.

What happens after the inspection? It has become customary for the orders (instructions) not to contain precise deadlines or specific people who are responsible, and to have a soft attitude toward people who are guilty of violating state and financial discipline. This not only does not contribute to improving things, but has a negative effect on the education of personnel.

Inspectors, seeing that their work is producing no positive results, frequently leave this work or else they cease to be principled and exacting. And if this is the case, the managers of the organizations under their jurisdiction can again violate state and financial discipline with impunity.

The effectiveness of control decreases as a result of departmental barriers as well. Sometimes there is a need to inspect an organization under a different departmental jurisdiction. But it is not always possible to conduct such inspections. Thus, for example, when inspecting an experimental farm of the Siberian branch of the USSR Academy of Sciences it was established that the management of the farm had purchased from stores of the URS of Sibakademstroy in excess of the established amounts of 13,600 kilograms of milk, 36,500 kilograms of vegetables, 30,600 kilograms of fish, 684 kilograms of flour and 39,000 kilograms of potatoes at retail prices for a sum of more than 32,000 rubles. All this was used for feeding cattle and other livestock. Because of the departmental barriers, the inspectors were unable to establish the reasons for such "generosity" on the part of the URS.

There are especially large barriers between the inspection services and agencies of the OBKhSS [Department for Combating the Embezzlement of Socialist Property and Speculation]. The activity of the departments for fighting against the embezzlement of socialist property is evaluated in terms of the number of cases of embezzlement established by police workers and in terms of the number of cases that have been solved. Therefore it is easier for OBKhSS workers to organize several inspection purchases in stores or public catering institutions, to establish cases of incorrect weighing or shortages of food products in various dishes, to draw up the document immediately and establish the guilty party than it is to handle one large case that has been turned over by inspection services.

Managers of departments are always unwilling to turn over materials from inspections to the investigatory agencies, and the inspectors have to expend a good deal of effort to prove the expediency of such actions. And these efforts are frequently in vain--regarding materials that are turned over to the OBKhSS or the procurator they receive a stereotypical answer: "Because of the lack of the elements of a crime, the case is closed." Or there may be no answer at all.

In order for the work of the control and inspection services to produce better results it will be necessary to improve a great deal in the style and methods of management of the inspection services. In our opinion, it would be worthwhile to eliminate the service for departmental control and to organize on the basis of the control and inspection administration (KRU) of the RSFSR Ministry of Finance a unified service of nondepartmental control. Even today this administration "watches over" the departmental inspectors. This control is of a one-time, periodic nature.

The control and inspection administration of the RSFSR Ministry of Finance exercises constant control over the financial activity of town, village, rayon and city soviets of people's deputies. Paradoxical cases arise, in which the inspection of the budget of a town soviet of people's deputies with an estimated volume of 50,000 rubles is conducted by an inspection brigade

(group) consisting of a minimum of four people, and a scientific research institute with an estimated volume of 30 million rubles is inspected by one departmental inspector. Moreover, the inspection of the town soviet is conducted every year, while the scientific research institute is inspected once every 2 years.

The KRU of the RSFSR Ministry of Finance enjoys well-deserved authority. The nondepartmental inspectors who have been relieved of branch dependency proceed from state and nationwide interests, and they have nothing to do with manifestations of local or departmental egoism. But the RSFSR Ministry of Finance is not thinking about taking the complicated, responsible and important task of organizing nondepartmental control. It is much easier to criticize the managers of ministries and departments for the poor quality of departmental control. But, after all, it is precisely through nondepartmental control that one can raise the authority of the local soviets of people's deputies and improve planning and coordination of territorial and branch management.

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## SHORTCOMINGS IN LABOR ORGANIZATION NOTED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 178-181

[Article by F. S. Vesnin, chief of the technical division of the Kurgan Production Association of the Dairy Industry: "Welder Missing"]

[Text] Two carpenters are walking along. The older one is carrying an ax on his shoulder and the younger one has in his hands a box with a hammer and nails. Behind them a middle-aged electric welder, covered with sweat, is pulling a heavy 100-meter cable.

"Hey carpenters, why did you drag the welder along? Why do you need him?"

"The door jambs have warped and it is necessary to reinforce them. We will drive in the nails and on the other side he will weld them to the fittings."

"Why, boys, are you not ashamed of yourselves? For thousands of years Mother Russia built houses with an ax and without a single nail, and they were built excellently!"

"At that time there was no reinforced concrete!..."

"But they also built rock castles, and in them the door jambs are still solid, and even now a child can open the 100-pood oak doors with a finger."

"How did they reinforce the jambs?"

"Have you forgotten the saying about wedges and moss, without which the carpenter would be lost?"

"We have heard it, but where will you get a wedge today? We receive prepared joiner kits, and there are no wedges in the set...."

"But the occupation of the master will suffer."

"What kind of masters are we? We are modern carpenter dash concrete workers...."

Sometime later the electric welder leaves this enterprise.

"Well, Nikolay Grigor'yevich, did you not like the work? Was the money not good enough?"

"No, the money was good, the cable was too heavy to carry from place to place, I am too old for that. I will find a job where I can stay in one place, and here everything is stopgap: the handyman has a broken bracket, the electrician has a broken ground, the carpenters' door jambs have fallen.... And everywhere you have to drag the cable!"

"The handyman and electricians could do this themselves."

"They could, but they all demand a welder."

"This is quite a small enterprise. One could count the men on the fingers of one hand: the director, the mechanic, the machinist, the welder and the electrician All of them can weld. And they can do it reliably. So that things do not break. But for a half year a new compressor has not been hooked into the system."

"Anatoliy Leont'yevich, why are you holding up the installation?"

"We need a welder."

"But you can all weld."

"We do not have the right to. We need to have a certified welder."

"Where can we get one?"

"You give us one."

"We cannot. A couple of days ago we released the last welder in our repair shop, everybody is running around on business trips."

"But anyway we had some conversations with the kolkhoz chairman here, and he promised to send us a welder for one day."

"That was a different conversation. But you, boys, prepare everything thoroughly: measure the pipes, cut them, bring them up and tack weld them so that all he has to do is weld them without stopping. After all, it is somebody else's specialist, and they are not letting us have him for very long."

A conversation a week later.

"Well, how did things go with the welder?"

"He was here. He worked a whole day."

"How can that be? There were only eight joints in all. Two hours' worth of work."

"Nothing of the kind.... They walked around the yard, looking for old pipes, cut off the ends, cut them to size...."

"But I asked you to do all that preparatory work yourselves!"

"But we thought this way: since you called in a welder, let him do it all, because we cannot weld, we do not have the right...."

The head enterprise. The combine. There are staff welders. One on the boiler staff and another on the staff of the shop. In the compressor shop the pumps which have been flooded with water have not been brought up from the basement.

"Aleksandr Vasil'yevich, will you be washing them long? It is necessary to bring them up!"

"We do not have a welder."

"You have two of them."

"They are not ours. The head engineer said that our shop's turn to have a welder will come in 2 weeks and not before. There is a lot of welding work to do everywhere."

"And what kind of work do you have?"

"Well, first it is necessary to cut the pipe."

"Well cut them."

"We cannot do that, that is what a welder is for."

"But what about with a hack saw?"

"You want me to cut it with a hack saw? Nobody can make me do that! That is manual labor!"

In the examples that are given one can see the general shortcomings in the organization of labor and training of workers. One can give many examples like this from many enterprises of various branches of the national economy. There are not enough welders for repair and operational needs anywhere. It is a deficit specialty. At the same time many machine operators, handymen and electricians can weld. For themselves, of course, about 15-20 years ago all installation work, including pipe laying, was done without electric welding. They cut the pipes by hand with hack saws, cut the threads with screwstocks, and if it was important enough they used soldering. Nobody demanded any certificates or rights. The work went more quickly. I know this too: in 9 years of work 15 enterprises participated in the installation.

But since welding has become one of the main technological processes in installation and repair work, why not permit everyone who is engaged in this work to weld (after a certain amount of training)? Let one do the cutting, another do the fitting, a third the tack welding, and the most important person--the welder by specialty--can just weld the joints without moving them and not being diverted by anything else, as in surgery: cutting up the abdomen and sewing it up is a matter for assistants. How much labor productivity would increase this way! Anyone who cannot perform simple electric welding operations--cutting, tack welding, will learn this in life anyway, if he is not lazy.

But why must life teach him? This should be learned in the GPTU and SPTU. Every worker should master the simplest welding operations. All training programs include the fundamentals of fitting work with practice, so let them include the fundamentals of welding with practice.

And after that there will be a selection: some people will end up with two left hands, while others will display a talent for the welding art, and he can be granted a diploma for doing welding work. Then this specialty will no longer be in short supply.

There are, of course, objections to my suggestion: the working conditions of the welder are considered to be harmful, and he is given higher pay and additional benefits, which workers in other specialties do not receive. But if these problems are not solved, they will just "hang there" and they cannot be solved at the level of the ministries. Foreseeing the possible objections, one might add that electric welding equipment for household use has long been sold in hardware stores. How does the factor of the harmfulness and danger manifest itself in this case?

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## COMPREHENSIVE UTILIZATION OF MINERALS URGED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 182-199

[Article by Yakov Makhlin, journalist, the village of Umbo in Murmansk Oblast: "Nature Has No Rubbish"]

[Text] At 5:30 in the morning a cavalcade of jeeps hurried out of Kovdor. The managers of the ore-enriching combine and the Kovdorstroy Trust were going to the gorkom bureau in Apatity. The conversation there was not light: the capacities of the second section of the Apatite-Baddeleyite factory, the largest construction project in Murmansk Oblast, had not been started up on time.

### An Unpromising Construction Project

At the entrance to the gorkom, while his "team" stretched their legs, the combine's director, Sukhachev, considered it necessary to remind himself once again:

"Answer the questions briefly, hiding nothing. In no case should you place the blame on the trust: regardless of how much our construction worker friends may deserve this! You did not travel 200 versts in order to settle accounts with your neighbors."

The discussion dragged on. During the break Sukhachev, who had long ago given up cigarettes completely, looked into the office of the head of the industrial transportation division and exchanged a couple of words with members of the bureau. Did he check out the situation? It was rather that he took advantage of the opportunity to exchange information. But also, of course, he wanted to find out from his intonation the attitude of the person with whom he was speaking. He had been familiarized with the proposed conclusions even before coming to the bureau. The parties who were to blame for the failure to start up the capacities were going to get it "with both barrels."

To the pointed questions which were diplomatically not condescending the director responded himself for the most part, rarely asking for additional information from one of his deputies. He admitted his mistakes evenly, calmly, point by point. Yes, the changes in the blueprints had been made too

late. And not all of the equipment had been issued for installation. And because of careless storage the control panels were no longer in complete sets....

The director had weighty justifications for all of the accusations. In one title list with the capacities of the new factory they had also indicated a new winter house for the combine's equipment. But the construction workers had started work on it during the prestartup period. They had not put a single gantry crane into operation, and they forgot about the heat and sewage system. And the previous warehouse could not be used because it was on the territory of a zone where a mine was to be expanded.

But the director did not refer to objective factors. There was no point in involving the bureau in straightening out mutual complaints among client and contractor. They are eternal and completely in keeping with the principle of teamwork. Members of the bureau understood this too. The quick-tempered remark of the young secretary of the party committee of the construction trust regarding the slowness of the client's services fell on deaf ears. And although the plan for the startup of the capacities was not fulfilled, everyone knew that the bunch of reprimands would only "indicate that measures were being taken" and create the appearance of activity. And it would also deflect accusations of inadequate attention and management from members of the gorkom bureau.

The real reason for the failure to start up the capacities lay outside of Kovdor. The chemical industry, which was financing the construction of the factory as part of the Kovdor GOK, turned out not to be ready to assimilate its products. And the first section of the factory, which was introduced at the beginning of 1975, stood idle for a long time.

So the meticulous Gosnab workers also sent the equipment to another destination than the unpromising construction site. Hence the enthusiasm of the construction and operations workers also declined. Man does not live by plan alone, and pointless work does not inspire him. And large disorders will inevitably bring small ones behind them.

The bureau of the Kirov gorkom decided to limit itself to a discussion of the problem of the startup of capacities in Kovdor. The danger was over....

Those who had been called into the bureau all got together and dined before returning. But Sukharchev hurried to his car. Within an hour he was on a plane to Moscow. On the next day he had to give a response to the board of the ministry. They had enough of their failures in ferrous metallurgy. And here there was also the chemical "foundling"--a factory into which it was impossible to breathe life.

The first practical step in the creation of ferrous metallurgy in the Northwest were taken before the war. At that time they opened up at the same time the Zaimandrov deposit of iron quartzites and the Yensk iron ore deposit, which was subsequently renamed the Kovdor deposit. There are now two ore-enriching combines working there--the Olenegorsk and the Kovdor.

Aleksey Ivanovich Sukharchev came as the head engineer to the Kovdor GOK which was under construction. He worked in this position during the prestartup and startup periods. And soon he became the top manager of the enterprise. Under him the combine assimilated its planned capacities for producing 2.4 million tons of iron concentrate and he gradually (after several turns at expansion and reconstruction) increased the output of raw material for ferrous metallurgy to 5.7 million tons a year. This is one of the largest enterprises in the Soyuzrudy system. Raw material is delivered for blast furnaces in Cherepovets, Magnitogorsk, Lipetsk and a significant volume--for export.

Incidentally, blast furnace production in Cherepovets is intended for a charge made out of a mixture of Olenegorsk and Kovdor raw material. But it was impossible to build both combines at the same time. Preference was given to the Olenegorsk combine because of the proximity of the depot to the railroad mainline. Until the startup of the Cherepovets metallurgical plant, only Olenegorsk concentrate could be sent. Of course, the metallurgists (and not only them) sent dispatches to Kovdor, one more threatening than the other. At the end of 1961 the third blast furnace was put into operation. The plant could no longer do without Kovdor concentrate, and there was not enough raw material. The situation became heated and grated on the nerves.

Probably since that difficult time Aleksey Ivanovich has considered laughter to be a necessary development in interrelations, an indicator, if you will, of a healthy collective. At that time no fuel oil was being sent out. The pumps were stopped, the pipes were blown out--nothing was happening. Before revising the entire plan, they decided to check the joints. And then an amazed voice rang out:

"What kind of an experienced fitter are you, putting a washer on a flange without drilling a hole?"

"What do you mean without a hole? It has a hole!"

The general laughter had a stronger influence than administrative measures would have. This washer followed the fitter around for a long time, and a discussion about difficult problems in the combine frequently began with a question: "Can you put on a washer without a hole?..."

#### Work on Two Fronts

At an operations meeting Sukharchev, if he is not in a good mood, always inserts the saying: "The engineer said to the people: if there is no ore--make do with rock!..."

Although the words "ore" and "rock" are related terms for the Kovdor deposit, geologists came to these parts after mica. The auger penetrated a giant crystal. Five, 10, 15 meters--and still there was mica, but it was iron ore alone that turned out to be the key to the underground treasurehouse. And the Kovdor GOK, which was created for extracting and enriching it, provided the key had fallen into conscientious hands, but at that time the Muransk Sovnarkhoz directed the Kovdor GOK which was just being born to work with mica. And this was rational. Nonetheless, if the managers of the Kovdor GOK

had "dug their heels in," referring to the difficulties of the prestartup period, they would have found support in their department. It had barely gotten on its feet, and now it was supposed to work on two fronts! It would have been easier to work in the mine where initially it would have been possible to dig rock with minimum expenditures. But now they had to create mine shafts and more than 3 kilometers of large-diameter drifts. All this was necessary for a final determination of the amounts of mica--phlogopite and vermiculite.

The combine created laboratories which grew into experimental factories for enriching vermiculite and investigating the electrical insulation properties of phlogopite. The Kovdor workers were the first in world practice to use wet separations when enriching vermiculite. They were also the first suppliers to the domestic market of this heat-insulating material with its amazing properties--a gold bulk mass of small mica scales.

The Kovdor GOK delivered the first industrial batch of vermiculite concentrate to the consumers approximately a year before the official startup of its iron ore capacities. It was also the client in the construction of the first stationary vermiculite-enriching factory in the country, and then buildings that had already been constructed were transferred to its jurisdiction--the RSFSR Ministry of the Construction Materials Industry. Ten years later, in 1975, the specialized branch put the the factory into operation.

But the industrial batch of phlogopite was sent to the client from the railroad sidings of the Gokdor. This problem has now been solved, but in those years an emergency situation was created at one of the locomotive construction plans. The prepared machines were standing waiting for electrical insulation materials. The raw material for them--200 tons of phlogopite--at the request of the republic Sovnarkhoz was delivered to the Kovdor GOK. By that time the merits of mica from the deposit were being praised by such enterprises as the Elektrosila and Dinamo plants, and the Kharkov Elektrotyazhmas H-plant.

This was not the main result of the intervention of the "iron" GOK and its director in the prospecting and development of mica which was not within its profile. The main result had to do with time periods. To this day these are recalled with envy on the Kola Peninsula. The active assistances from the combine helped a great deal in bringing near the time for defending the new deposit in the state commission for reserves, and within just a year it was possible to begin industrial extraction of phlogopite.

It seemed that everything was in place. The Kovdorslyuda combine appeared in Kovdor, the Kovdor GOK turned over the mica relay baton, and it could peacefully turn its attention to carrying out its direct commitments to ferrous metallurgy. From the standpoint of the quantity and quality of iron ore concentrate they were operating normally, surpassing planning indicators. The calculated 62 percent of iron in the concentrate was quickly covered. Almost every year the ore-enrichment workers added to this indicator one-tenth of a percentage point, which amounted to tens of thousands of tons of additional metal. By 1971 the capacities of the combine for iron concentrate had increased to 3.2 million tons a year. The collective became accustomed to

well-earned bonuses. The rows or private garages around the city grew as rapidly as the residential areas did.

But the director had long been cautious about wearing the medal of the Lenin prize winner. He did not want to forget: suddenly, unintentionally in Moscow in the corridors of the Ministry of Ferrous Metallurgy they would remind him that he had received it for mica and not for iron ore.

During the period of the triumph on the phlogopite line, another subdivision appeared in the Kovdor GOK--an experimental installation for enriching apatite from wastes of the existing iron ore (magnetite-enriching) factory, again outside the profile of a ferrous metallurgy enterprise.

#### Life--A Difficult Test

For almost 10 years I had occasion to meet and speak with Aleksey Ivanovich Sukharchev almost every day. All these years were different. There were peaks which were marked by high state awards. And sometimes the clouds thickened. First there would be a rumor that the director had been offered a prestigious post on the main board. Then suddenly his name would appear on the lists of candidates for deputies to the city soviet. Understanding people thought that he was the focal point of all actions....

These rumors did not bother Sukharchev. Only once, I recall, at the very height of the regular "resistance" partially on local soil, and partially with the home ministry--Aleksey Ivanovich announced at an operations meeting that the rumors about his going on pension were greatly exaggerated. That he did not intend to take such a step in the next few years and he did not advise anybody to start getting ready for any administrative changes.

Working in the North plus the miners' benefits in Kovdor somewhat changed the ordinary ideas about pension age. Sukharchev's career (and why does one fear this word?) generally impresses one, even according to today's standards, as being young. At 33 he was the head engineer of the largest enterprise under construction in the oblast, and at 36--the director. It would seem that at these rates it would be a shame to stop. He should go on to something bigger and better. But he did stop. And he did not even enter the science of combining occupations, as one does nowadays.

The joking "Peter Principle"--a person stops climbing up the career ladder when he reaches his level of incompetence--does not apply to managers of enterprises. They do not have a life, but a series of tests of their ability to make decisions. Both in current production affairs and in future ones. A scholarly degree with its rigid formal requirements is nothing for an intelligent manager. A person who is accustomed to dealing with the minutes of the working day efficiently (not normed!) begins to think: is it worthwhile to waste them on graduate school, that is, on obtaining another higher education?

The Kovdor GOK is right up with the neighboring enterprises in terms of the number of candidates of sciences. They--ore enrichers, psychologists, geologists--have defended dissertations on subjects that pertain to the

activity of the combine. The combine's director, A. I. Sukharchev, has also participated in implementing the ideas of the production worker scholars. More frequently he himself has submitted the ideas and set the tasks. They have sometimes had to do with geophysical methods of prospecting for ores in the deposit, and sometimes methods of enrichment.

Here it would be fairer to award him a scholarly title for the totality of his work. Can it really be that there is no way of measuring the talent of the manager or his contribution to the implementation of scientific ideas in production? We do not consider experimenters to be second-rate scientific workers. And here successful experiments with real results are conducted not in the laboratory, but on the scale of a large enterprise--it is something that happens every day and it is almost as ordinary as an everyday occurrence.

#### How Is Initiative Threatening?

In a small city one can always live, like an actor on a stage, everything is in view. Here rumors that the director was writing a dissertation for the design division would have arisen even before the director had thought about taking up a copy of a blueprint. But the top manager cannot allow himself this. Later no supports would have propped up his authority.

Sukharchev had achieved a great deal in his life. On his path there were enough events which were worthy of leaving a "good impression on earth." But he did not look around, but tried to look forward.

By the beginning of the 1960s the geologists had finally figured out the structure and composition of the Kovdor deposit. In terms of the existence of phosphorus pentoxide, the ore in Kovdor was not quite as good as that in Khibinsk. But it was still extracted, and the phosphorus, and impurity which is harmful for iron, was removed during enrichment. And in the wastes of the magnetite-enriching factory there was so much apatite that it was necessary to discuss the matter of extracting it separately. The planners suggested joining the three different productions closely into a single technological chain of enrichment. The iron could be extracted in magnetite separators, and the rest--with the help of flotation and gravitation. In other words--comprehensively.

In the home Ministry of Ferrous Metallurgy they thought: will this comprehensiveness and list of products that are outside the profile of the ferrous metallurgy not have an effect on the quality and quantity of the iron ore concentrate? The more so since at that time, at the beginning of the 1970's, it became finally clear that it would be necessary to increase the capacities of the combine for producing iron. Was the director Sukharchev, an enrichment worker by education, sure? Well, he would have to do the work, but everyone would have to be held accountable! The more so since he had never worked with apatite before. The difficulties with the ore were beginning. It would be necessary to work not with one, but with three components at the same time. This would be not three times, but a dozen times more complicated. Any enrichment worker would tell you this.

By the time of the completion of the construction of the first section of the new factory, Sukharchev was alarmed by the prospects of sales. The apatite capacities were running out. If not today, then tomorrow the construction workers would have to be paid. A month, maybe two or even a half year--and the wheels would come to a halt. And the planned consumers of the final product had not yet been determined, although throughout the entire preceding year the experimental department had been preparing a batch of concentrate.

It was as though the director were looking into water. The first industrial batches of the new product had met with threatening telegrams: "Stop sending the concentrate"; "We will not pay for it"....

How could one reach the planned capacities here if the new raw material causes entire plants to go out of operation! An abundance of magnesium is an unquestionable merit of the Kovdor apatite--there was a shortage of this with acid processing. The client, the Ministry of the Chemical Industry, hoping for the best under the existing conditions, adjusted the plan of the Kovdor factory time after time. In the direction of reducing it.

After this can one be surprised at the economic paradox? The enterprise which was the first one on the Kola Peninsula to begin efficient comprehensive utilization of the ore from deposits, turned out to be up to its ears in debt. The expenditures for maintaining the new factory were paid completely by the combine's main product, the iron concentrate. Again the prices for Kovdor raw material for ferrous metallurgy did not take into account its natural alloy properties. And the collective which had been a leading one up to now ended up on the planned loss bench. The Ministry of Ferrous Metallurgy had to cover the expenses out of its own pocket.

But the construction of the second section of the factory continued. There was no point in stopping it now, since a temporary closedown would cost even more. The gorkom bureau, as we know, decided to limit itself to discussing the reasons for the failure to introduce the capacities. In the board of the Ministry of Ferrous Metallurgy the financial consequences of the long-range undertaking in terms of comprehensive utilization of the deposit elicited more decisive measures. The Ministry of the Chemical Industry was somebody else's house, but Sukharchev was right here! He had to answer to the maximum for the difficulties that had come down upon his home branch! And set things in order, initiator!

#### A Little About Style

Usually we see the director in the place where Chapayev consulted in the film by the same name: in the front on a dashing horse. In the presidium, at the tribunal, at the chairman's table in various conferences. If he does not have the first word, he absolutely must have the last word.

It is possible that one would not call Sukharchev's style optimal. Because of the orders he believes in and takes advantage of the rights that are granted to him. But he likes it better when the subordinate himself that there is no other solution. At the combine frequently personnel transfers are preceded by collective discussions.

Once the candidacy of the possible chief of one of the shops was being discussed. He came to the combine from the tekhnicum, completed the correspondence institute, and was an intelligent, decisive and knowledgeable person. The director gave a positive characterization of the specialist. But, as if correcting himself, he said:

"But still I would not be in too much of a hurry about the appointment. You understand, the person has no sense of humor. And without this quality a person can break down in a management job."

This is not a veiled "game of democracy." This is a principle. If one cannot learn to adjust oneself to individual links in the management chain, if they are not joined to one another--there will inevitably be breaks. It is another matter when the director sometimes takes on himself responsibility which could be taken by his deputies.

One of the recent cases. The deadline was pressing down, but the capacity for fuel oil was still not fully ready. And the tanks had arrived at the station on time. Should they refuse to accept the fuel? That is easy to say: ahead is a long winter and the combine's thermal electric power station is the only source of heat in the city. Sukharchev ordered to have the fuel oil poured into the capacity which had not yet been accepted from the construction workers. The city slept peacefully all winter. But by the beginning of the next heating season the director was still being called to account for the several tons of fuel that had leaked into the ground.

But in any case Sukharchev did not take it very well when his subordinates departed from technological rules. Or when they departed from ethical norms of behavior either. It is very difficult to persuade him that a person made a random mistake or that he did or did not do something out of malicious intent. At first it is not possible at all, and there is no point in saying anything. After a month things settled down. But his caution remains until the very end. If you want to leave the combine or leave the city he will not hold you back. But he will think twice about taking you back.

But he is not all work! You should see him when he takes a picture of his grandchildren out of his pocket. He is proud that his son and daughter are parents and have become mining engineers. He rarely reveals this. He considers it improper to pour his emotions out on the person with whom he is speaking. This is improper for a director. For a person whose interactions with people are always built upon a business basis.

They say that the first manager of the combine who held the post for a short period before Sukharchov did had a 2-hour lunch break. He managed to eat and sleep for an hour. And he seemed to be a very hardy person, shaven and shorn morning and night. And he left his track. Up to this point, where the technology allows, the meal break at enterprises of the city last for an hour and 15 minutes or even more.

Sukharchev's workday begins with a tour of the shops. According to a schedule and route that is known only to him. Today he is going to the tailings dump--

an immense man-made lake, and tomorrow--to the mining faces or to the repair yards of the mine. By 9 am he is in his office. He does not receive anybody while he is talking on the intercom. He drinks tea and listens. Sometimes he inserts a response. Sometimes a reprimand as well. Most frequently he listens, and makes notes on his calendar or in his notebook.

He does not stay late in the evenings unless there is a special need for this. But on Saturday and Sunday, as a rule, he spends a couple of hours in his office. He does not answer the phone and he does not call anybody himself. The door is closed and there is no secretary. Everybody knows about this, but nobody comes and bothers him.

Following Sukharchev's lead, people here do not address each other on a first-name basis. And even when he is not there they rarely use more familiar terms of address. And yet many people if they were not born here, grew up side by side and have worked together for more than 20 years. Sukharchev is also the senior manager of the combine in terms of age--he is 58.

On his days off Aleksey Ivanovich looks over the technical literature. He has two piles of books and magazines. He subscribes to and buys everything that pertains to comprehensive enrichment of minerals. The other issues can be found in the new books in the combine's technical library. He makes notes. He respects statistics. Figures are constantly "working" for him, as are tables of comparison--with the latest data. He does not commit them to memory, but he brings figures out of his notebooks and he always knows where each one is. Consolidated data he keeps in the left pocket of his jacket. Questions from the area of mining or enrichment will not take him unawares. And he not only cites the primary sources, but also gives advice about which ones are best. By the same token he has information about all of the multifaceted life of the combine.

Nobody would believe that the life of the director consists exclusively of joys from production. In terms of the number of heart attacks among directors, this small segment of the population, as we know, has outpaced the average statistics. Overloading and harmful working conditions. And there is nobody to complain to. And one does not complain in the director's building; they do not understand such a manager. And in conversation with his subordinates he must be selective about what he says and weigh every word. His superiors do not stand on ceremony with him. They consider that they are speaking with someone who is responsible, there is no time to spare, and there is no point in indulging in idle chatter. Only the essence, in order to keep the conversation brief. Figure it out and take the necessary measures. Those are all the recommendations, and they are valuable instructions....

And it is futile to try to get rid of the stressful emotions at home. It seems to me that without the constant support of his wife, Galina Sergeyevna, also an enrichment worker by profession, Sukharchev would hardly be able to constantly "follow his production line." It seems that they studied in the same group at the institute. Galina Sergeyevna worked at the same combine as her husband does before she went on pension. Not in an especially position.

### The Combine Also Needs Asters

People need well-arranged apartments, schools, hospitals, kindergartens, dispensaries, palaces of culture, a stadium with a swimming pool, saunas in the shops--all this is clear. Sukharchev cannot be moved from this position. Kovdor was the first city in the oblast to get rid of barracks. But when it came to a society of gardeners and recreation bases in the bosom of nature--there was doubt for a long time. They believed it when the builders constructed such a base for themselves and people began to praise this undertaking everywhere. Then the director found an original solution--for the combine to take over an abandoned village of timber procurement workers and construct a recreation base there.

Or there is this sentimental example. With flowers. In one of the shops a heated corridor was empty. There were some enthusiasts, a man and his wife, who suggested constructing a hothouse in it. And now anniversaries and birthdays are celebrated with bouquets of asters and calla lillies in hand. And yet for many years from Kovdor people had to go for flowers to the market in Murmansk or even Leningrad. It was not until the beginning of March that the ORS established an air bridge over the Caucasus so they could get mimosas and tulips. And this is not every year.

The flower hothouses have turned into an advantageous place to put capital. Although the bouquets are not sold at commercial prices here and are given out free of charge. There is nothing to hide: almost all the strict commissions have found it necessary to register in documents their disturbance regarding hothouses: two people were dressed as workers from the enrichment section, but instead of this they were raising flowers and the director closes his eyes to such a violation of financial discipline....

### A Little Bit About Unified Interests

With the transformation of Kovdor from the village of a combine into a well-arranged city, enterprises of various departments have gradually been established here. And although the Kovdor GOK and its daughter subdivisions employ 60 percent of the able-bodied population, funds from ferrous metallurgy have been used to construct more than 90 percent of the general purpose facilities that come under the heading of "social cultural and domestic" in the city.

But what about the service of a single client? It has been recommended, it has been tested and it makes it possible for all construction enterprises to receive housing in proportion to their shared participation and to make their shared contribution to the other needs of the city. But there is no such service in Kovdor. The neighbors are oriented toward pure housing, toward apartments "without burdens."

The neighboring combine, Kovdorslyuda, did not invest a single ruble in the construction of the new building for the polyclinic. Then after the housewarming they immediately began to finish offices for "their own" shop physicians with all their might. The patients do not understand the fine points of banking. They know that therapeutic institutions are supposed to be

constructed. And with their own eyes they see which manager is displaying concern and which one seems to be in no hurry to do this. A minor case, but it is not as inoffensive as it may seem to be.

No matter what you refer to in the city--paving the streets or construction the dairy, the television relay station or a garage for the fleet of buses, a road to the Leningrad line or reconstruction of the railroad station--the story is the same. There is no single manager, although all have the same interests.

I would think that Sukharchev would have the ability to persuade his excessively thrifty neighbors. With the help of that same "long drawer"--the adult version of the children's game of staring. The loser is the one who is the first to be bored. Because if a road is necessary for normal development of the region, somehow it will appear; if the norms provide for a dairy, it will be constructed someday. When? Therein lies the rub!

But still the losses because of local departmental ambitions can in no way compare to the losses from the lack of a general plan for the general development of the region. This is not only a problem for Kovdor. But in Kovdor, because of the compactness and the many components of its deposits, this problem is especially crucial.

Twice the Kola branch of the USSR Academy of Sciences convened a coordination conference on the question of a general plan. Representatives of 20 academic and branch institutes met. Nobody said that it would be possible to put off creating a general plan; they all insisted that it was necessary, and as quickly as possible. The calculations were done, and they found out how the expenses would be recovered and what the gain would be. But the Kola branch had a consultative vote. And the four departments that were involved--the Ministry of Ferrous Metallurgy, the Ministry of Nonferrous Metallurgy, the Ministry of Fertilizers and the Ministry of Industrial Construction Materials (not to mention the fifth one--the Ministry of the Timber Industry)--were in no hurry to join forces. And yet the raw material for the four branches is not located in separate strips; it is densely intermixed on a small area of 45 square kilometers. It cannot be extracted individually.

A general plan would provide the interested parties with all the necessary information. Since it would be based on the future, each department could have as much as it needed when it needed it.

Possibly the most efficient solution is to create in Kovdor an industrial mining association, a unified supplier of raw material for the processing branches. It would combine the funds allotted for the development of various production according to the needs of the national economy. Then apatite would cease to be a heavy burden on ferrous metallurgy, and when extracting mica, phosphorus containing raw material would not be dumped.

The opinion which I cannot bring to the subject of merging the departmental and interdepartmental methods of management in Kovdor is the opinion of A. I. Sukharchev. He thinks that the issue is not ripe yet. "It is riper, but it is not ripe...."

## In Step With the Times

The second section of the apatite-badaleyite factory (ABOF) of the Kovdor GOK was put into operation. But for another 10 years the combine's apatite capacities did not operate at full force. The personnel had been trained, the technological process had been arranged, the machines were humming, but only half the planned amount of products were produced--600,000 tons. Finally the chemical industry, or, rather, the enterprises of the Ministry of Fertilizers, tightened their defenses. But the factory, which was equipped with hundreds of mechanisms, enmeshed in dozens of kilometers of pipes for hydraulic transport is not a Zhiguli truck, and the speed cannot be increased rapidly. Machines--yes, they can be hurried up. But the personnel have to be retrained and resituated. Sukharchev is a manager and administrator. Behind him is the collective, for each member of which must create normal working conditions. "They have to be able to feed their families!"

During all the years while the ABOF was working at half its capacity because of the difficulties with sales, the manager Sukharchev was bothered by the fact that the reagents make it possible to extract from the pulp only two-thirds of the apatite, while at the Apatit combine they extract almost all of the products. The losses are tantamount to the productivity of an entire factory! While the ABOF was being constructed, its capacities were assimilated and it was awkward to admit that the rigid scheme without buffers at the joints did not contribute to an efficient technical process. And the ABOF floats wastes from the magnetite-enriching factory. They have managed to extract apatite from these wastes, which is good, for if they had not managed the pulp would have to be poured into the tailings heap or otherwise the combine would come to a stop.

When the railroad workers were slow in handling the goods--it was the same story. The capacities were sufficient for holding only enough apatite concentrate for a couple of days. But they still extracted the ore, shipped and processed it, extracted the iron from it, and the apatite, as they say, excuse me, is not ours! The pulp cannot be stored and after a couple of days after it comes in contact with the water the apatite cannot be extracted with any reagents.

It is another matter that the wastes from apatite production are now being taken into account as well. They have turned out to be a valuable product for applying to acid soils and they could serve as the raw material for obtaining processed phosphates. Moreover, scientists have already begun to keep tract of carbonate rock: there are considerable supplies of them in Kovdor. After extracting the apatite from them (all of ores in Kovdor have numerous components) the line can be used for baking with Khibinsk nepheline in aluminum production. This is obviously more advantageous than shipping the nepheline in from Pikalevo in Leningrad Oblast, and then shifting the aluminum back, to the Kandalakshskiy aluminum plant. Incidentally, when baking lime with nepheline one obtains almost the same proportions of clay and soda products, and from the remaining mass one can obtain cement. It too is still being shipped to the oblast from a thousand kilometers away and more.

So the prospects for changing over to waste-free production are realistic. And these prospects are perhaps the main

So the prospects for changing over to waste-free production are realistic. And these prospects are perhaps the main thing toward which Sukharchev has proceeded throughout all his years. And will it not happen that by the end of the century the iron ore concentrate will become a byproduct of the combine and that apatite will surpass it quantitatively? No, Sukharchev is no prophet, he is a realist. But he is the master! Even in the middle of the 1960's he, an engineer, was ready, and he saw and spoke loudly about the fact that it was unprofitable and inefficient to throw away products that were actually suitable for processing, on which money had already been spent. And he did everything in his power to include these products in the list of products of his enterprise. And he is not sorry.

When thinking about what the director has achieved and what he has not achieved, we should not forget about the years of the establishment of the chemical branch in Kovdor. There is no domestic analogue for comprehensive assimilation of natural resources. The comprehensiveness of the utilization of minerals has proved its viability. It will be easier to follow in its tracks.

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CSO: 1820/31

## COMPUTERIZED EDUCATION PROBLEMS DESCRIBED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 200-208

[Article by G. B. Kochetkov, candidate of economic sciences, head of the sector of applied research of the Institute of the United States and Canada of the USSR Academy of Sciences (Moscow): "The Difficult Path of Computerization of Education"]

[Text] Socioeconomic and scientific and technical progress in the 1990's will be pinned significantly on the skills of the population in the utilization of computers--this is the conclusion at which many scholars are arriving. Each year the role of electronic computers increases in industry, science, trade, education and other spheres of human activity. As early as the 1970's many countries were talking about eliminating the so-called "computer illiteracy" (they have in mind a lack of knowledge and a lack of understanding of the possibilities of the utilization of computer equipment) and about the development in schoolchildren of the skills of working with the new information equipment.

But the processes we have mentioned are fairly complicated. This is clear from the example of the United States. As early as 1954 the National Science Foundation and the Education Administration developed several corresponding research projects. By 1962 about 200 colleges and universities had computer centers. The utilization of electronic computers for improving the forms and methods of teaching was considered to be a very promising direction. Enthusiasts of automated teaching predicted that by the beginning of the 1980s computers would lead to a revolution in secondary and higher education. But the results that were achieved turned out to be much more modest. In 1982 the U.S. National Science Foundation admitted that the new information equipment had not significantly affected the education system so far.

### "An Empty Dream"

Automation of the training process has been given the label "an empty dream." One of the main reasons for this is that any innovations in the system of education in the United States is financed centrally by the government only in the initial stage. As the application of computers expanded in the schools and universities the expenditures both on research and on the creation and

operation of automated systems were transferred to the local agencies. Thus while in the 1964/65 school year 36 percent of the expenditures of the universities on the creation and operation of computer complexes were covered from the federal budget, by the end of the 1970's--only 17 percent were. Of the funds which were used by the secondary schools for these purposes in the 1974/75 school year, now federal subsidies provided for only 3 percent, or little more than \$10 million.

In 1978 the U.S. Congress prepared a report entitled "The Computer and the Learning Society," in which the situation in the country was characterized as inadmissible. A task was set to develop a unified national policy for applying computers in education, and they began to coordinate the activity of the schools and universities.

A serious problem which the developers of the automated education systems encountered was the lack of preparation of American teachers for extensive introduction of computers, and to their lack of understanding of the possibilities of the new systems and their consequences for the educational process. The instructors, especially in primary and secondary schools, were all from the most conservative segments of the American society and they were mistrustful of any innovation. Questionnaires showed that they had a cautious attitude toward automation of education.

Two types of automated systems are used in education. In the systems of the first type--automated control of education--the computer helps the teacher to monitor the training process and to perform routine auxiliary operations (recording and monitoring tests and examinations, processing statistics, and so forth). As a result, the educator has greater opportunities and time for passing on knowledge to the students and for creative activities. An experimental evaluation of automated systems of this type which was conducted in one of the regions of New York showed its great effectiveness. They measured the success rate in mathematics of students in grades 2-6 before and 1-2 years after the introduction of the automated system. It turned out that an increase in expenditures per one student of 8.3 percent increases the success rate by 49 percent. During the second year of operation of the system expenditures on it even decreased somewhat, but the success rate continued to increase. An analysis according to the criterion of "cost--results" showed that automated systems of this type are more effective than traditional methods of conducting classes by 37 percent in the first year of operation and 71 percent in the second year. In the opinion of experts, these figures will increase even more as a result of the inevitable reduction of the cost of equipment and software. Since the systems do not replace the teacher, but serve as an important support in their work, 90 percent of the educators who were questioned actively support them. Yet they are being introduced slowly, since the teacher must have a high level of knowledge and the ability to work with computers in order for them to be utilized effectively. As a result, by 1982 only 9 percent of the secondary schools with computers had created systems for automated control of the educational process.

The second type is a system of education with the help of electronic computers. Initially they relied mainly on individual education: by communicating with the machine, the student himself establishes his own

optimal rate of learning. It was thought that these systems have essential advantages over the traditional methods of teaching: they save time, the effectiveness of the labor of the educator increases, the knowledge is more firmly assimilated, and so forth.

During the 1970's it was these systems that were considered to be the main form of utilization of computers in education. But the teachers actively resisted them. Why? First of all, the teachers saw in the computer a competitor who was potentially capable of eliminating them from the learning process. In the middle of the 1970's when the system of education in the United States was undergoing a crisis, this factor had an especially strong effect. But the teachers soon became convinced that their fears were groundless. In the second place, in order for new information technology to become an organic part of the learning process, educators must master it. In the United States the producers of the computers took over this problem. Thus the Apple company, the leading producer of computers that are installed in schools and universities, when selling a machine to an educational institution, teaches the educators to be "computer-literate" free of charge.

In certain school circles special organizations have been created for these purposes, which are financed from budgets of the local authorities. The best known among them is the Consortium on the Application of Computers in Education of the State of Minnesota, which was created under the aegis of its administrative department. The consortium combines all levels of the system of education (from primary schools to the universities), renders technical services to its members, and trains the educators in methods of utilizing the latest equipment. But the inadequate "computer literacy" of the instructors up to now has been a serious obstacle to further introduction of automated learning systems. And yet it is the teachers who should be the initiators of the purchasing of new technical equipment. Their support is a necessary condition for success in the introduction of computers into education.

Another serious problem is the inadequacy and poor quality of software. This problem is closely related to the preceding one, since in order to solve it is necessary to have the cooperation of instructors, programmers and psychologists. An investigation conducted in 1982 by the Ministry of Education showed that a large part of the programs are written in the form of modules which are not conjoined with one another or with other kinds of training or textbooks, the material in them is presented in a boring way, and there is a prevalence of examples to reinforce what has already been done. Only a few programs make the creative elements of learning more active. Thus an analysis of programs in the BASIC language shows that in 1979 only 3-4 percent of the overall number of programs were acceptable for extensive utilization, and the rest were comprehensible only to their authors.

According to the estimates of American specialists, the situation is not likely to change in the near future. The reason is that the sphere of education does not attract private business since the profits in it are not high. Large firms will not risk investing money in the development of programs which might not be successful. The majority of programs that are being offered for education have been developed by a second-rate company, and their quality is poor. Highly qualified developers are not yet participating

in this process. The real solution, in the opinion of experts, is to increase state subsidies of programmed software and to enlist good specialists in programming for educational purposes. In 1982 the Ministry of Education allotted \$16 million over 3 years for these purposes. But this is just a drop in the bucket. Specialists think that one cannot realistically expect progress in this area under the present administration. The Reagan government is following a strict line of economizing on state funds that are expended for social needs, particularly for education. Even the customary, well-established items of expenditures are being reduced, so it is even more difficult to introduce new ones, for example for the application of computers in education.

It will be possible to solve the problem of program software only when the computer enters organically into the life of the rank-and-file citizen. Only then will most of the teachers be optimistic about computers and have a desire to develop programs. This is the way other technical innovations found their way into the sphere of education, for example, radio, television, tape recording and hand calculators. Only after these innovations became the property of the masses did they find their way into education.

The introduction of automated learning systems requires any valuation of their effectiveness. Right up until recently this factor has been a decisive one when the administrations of schools and universities have decided to introduce computers. Research conducted in 1978 confirmed that automated learning systems are ineffective because of the high capital expenditures. Only in places where sufficient funds have been invested (for example, in retraining of personnel in large firms) have they produced higher results than the traditional methods have.

Thus the Plato system was organized on the basis of a large computer center which belongs to the University of Illinois, to which they hooked up 400 video terminals located in 130 university centers. It was thought that this kind of centralization would increase the economic effectiveness as a result of saving on the scale of computer operations. But the hopes were not justified. The Plato system has been recognized to be not very effective: while under ordinary conditions 1 hour of training of a student in U.S. universities in 1978 cost 1.4 dollars, with the use of Plato it cost 3.2 dollars. At the same time, as special investigations showed, the system did not appreciably increase the success rate. But its proponents assert that any comparisons of the new method of teaching with traditional ones are wrong, since they are based on principally different approaches to the assimilation of knowledge. But nonetheless the high cost of Plato (during 20 years of operation for research and development more than \$900 million were spent) limits its further dissemination.<sup>1</sup>

Developers of the Ticket system learned from this mistake and created it with inexpensive microcomputers and standard television sets. Therefore its development cost only \$5.6 million. But up to this point Ticket is being used in only three school courses (two in mathematics and one in the English language). Students who are studying these disciplines with the help of the automated system have received fairly profound and durable knowledge, and their grades have averaged 5 percent higher than those in the control group

who were studying according to the traditional methods. So far it has been impossible to evaluate Ticket according to the criterion of "value--results" fully enough because of its limited use.

The appearance and extensive dissemination of personal computers can reduce the corresponding losses. Thus in 1965 one school desk equipped with a display cost \$50,000, in 1975, because of microcomputers--\$5,000 and by 1985 this amount will apparently drop to \$1,000, which, translated into one training hour, amounts to \$1.50 (traditional lectures and seminars cost \$2 per training hour).

#### The Personal Computer Boom in the Schools

The situation changed sharply during the second half of the 1970's with the appearance of personal computers--small general-purpose computers which have no special requirements for temperature conditions and, the main thing, are inexpensive. They received their name from the fact that they are intended to satisfy the information and computer needs of an individual person (scholar, specialist, writer, teacher and so forth) and not a group or an organization. The most widespread personal computers are the size of a briefcase, weigh a couple of kilograms, operate on household alternating current, and in terms of their computation capabilities are comparable to the average class of computers in the middle of the 1970's.

Personal computers are actively entering life. The first of them appeared in 1975, and by 1983 the population owned more than 5 million machines of this kind. They have moved into the category of durable consumer goods. All this has created incentives for extensive application of personal computers in schools and as "home tutors."

The personal computer and the videodisc system for it are combined with a standard television set, forming a standard configuration for training. One side of a videodisc contains 54,000 color frames which appear on the screen at the command of the computer. The main problem with these systems is the quality of the training programs.

Mass introduction of personal computers does not mean that large, costly general-purpose computers are losing their significance. Their role will increase as before in economics and other spheres of public life (bank operations, numerous computer and information networks, complicated scientific calculations, weather forecasting and so forth). But these computers operate in computer centers with special conditions for temperature, humidity, cleanliness and so forth. They will continue to be a mystery to the majority of the population.

Beginning in the 1980's the number of electronic computers in schools will increase sharply. In 1980 31,000 computers and 21,000 terminals were installed in the schools, and even by 1982 these figures had increased to 97,000 and 26,000, respectively. It is expected that by the end of 1984 the number of computers will reach 120,000. In 82,000 schools 75 percent of the computers are installed in vocational and secondary schools, and only 25

percent in primary schools. By the beginning of 1983 there will be an average of 400 students per one electronic computer.

Extensive introduction of microcomputers has one more important consequence for education--they have appeared in the homes and are now being used for self-education and developmental games. Special software has been created for home computers in history, English and foreign languages, mathematics, physics and chemistry, and programs with color graphics have become very popular. All this creates the necessary conditions for the continuation of education at home with the help of these same automated means.

Automated learning methods have considerably increased the effectiveness of extracurricular studies since they are less regulated than the school program. The students themselves select the material and the conditions for working with them, and therefore the knowledge they assimilate is more durable. But then they automatically try to avoid what they consider to be the difficult and uninteresting elements of the program. Therefore home learning is fragmentary. It is possible to overcome this shortcoming only by closely coordinating it with learning in classrooms. Consequently, it is necessary to have new methods of utilizing computers which take into account the psychology of the students.

Many parents, in order to increase the success of their children, are trying to purchase home computers which would replace tutors. In this connection one should note that with the appearance of personal computers and the expansion of the volume of extracurricular studies, there should be a sharp increase in the expenditures on education which are borne by the families of rank-and-file Americans. The training process is shifting partially from classes, where it is carried out at the expense of the state or federal government, to the family. But far from every family, even with the lower prices for computer equipment, can afford additional expenditures on computers and software. Therefore many American specialists think that computerization will lead to even stronger differences between the education of the rich and the poor.

Having created a base for mass utilization of computers in education, microcomputers not only have not solved many fundamental problems of automated learning, but have even aggravated them. These pertain first and foremost to the goals of automated education. The majority of existing programs and systems proceed from the assumption that the traditional learning methods in schools and universities are optimal. It is only necessary to make them more economical. Yet research has shown that automated learning systems which are based on the traditional approach do not produce any appreciable advantages. In the opinion of many specialists, the traditional path is a blind alley; it is necessary to have principally new approaches. The majority of traditional systems (particularly all those developed in the 1970's) give the students a certain sum of facts and interconnections among them. They are now relying on methods of cognition of activity, with the help of which the educated person himself will extract the facts he needs. Therefore in connection with the new wave of automation they are extensively considering the problem that the existing system of education in the United States does not meet the requirements of the scientific and technical revolution.

The problem of "computer literacy" under these conditions ceases to be a matter for specialists in computers and their application. The ideas contained in it are of much broader significance. High-level algorithmic languages and the logical structures that are created with their help are becoming an important element in the future education systems.<sup>2</sup>

They are now experimentally testing systems in which they are trying to use programs with artificial intelligence to control the process of cognition. One of the most well-known is the Baggie system which augments the traditional system of automated control of problem-solving in mathematics. Baggie analyzes the mistakes made by the student and on the basis of these creates a diagnostic model for solving the problems. Thus it reveals the reason why the mistakes are being made repeatedly and the area in mathematics to which attention should be devoted. The system recognizes about 50 basic mistakes and more than 300 combinations of them which are encountered when solving arithmetic problems. But successful application of systems of the Baggie type is possible only under the condition that computers are a stable part of the learning process.

We can see that in the 1980's the computer is becoming an indispensable part of the learning process--just like the textbook, the notebook and the educational film. And it is no longer a question of whether or not the computer will be used for teaching, say, history, but of how much this will change the content and methods of education.

#### FOOTNOTES

1. In 1982 the firm Control Data reoriented Plato for personal computers. As a result, in that same year the utilization of this system increased by 20 percent.
2. In certain universities a knowledge of one of the high-level algorithmic languages is considered equal to a knowledge of a foreign language when preparing for a doctoral degree (which corresponds approximately to the degree of candidate of sciences in the USSR).

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## RESULTS OF MANAGEMENT CONFERENCE REPORTED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 209-216

[Article by B. P. Kutyrev, candidate of economic sciences (Pavlodar-Novosibirsk): "Toward System Management of Production"]

[Text] Notes on the scientific and practical conference "Improvement of Management of Enterprises on the Basis of the Target Program Approach."

Participants from 32 cities of the country--from Tallinn to Khabarovsk--came to the conference which took place in Pavlodar at the end of last year. Of these 60 percent were representatives of production, including 19 managers of enterprises and 40 scientific workers.

### How To Conduct the Conference More Fruitfully?

Management problems were discussed in Pavlodar. But management is multifaceted and therefore they decided to discuss, in the first place, the target program approach to improving the management of an enterprise and, in the second place, management consultation. The selection was explained by the fact that the Institute of Economics and Organization of Industrial Production of the Siberian branch of the USSR Academy of Sciences, with the participation of specialists from other institutions, organizations and enterprises of the country, at the request of the Pavlodarskiy Traktorny Zavod imeni V. I. Lenin Production Association (PO PTZ) rendered consultation assistance which was based on the target program approach. It was useful to discuss the results of this work.

For the conference they printed materials in the form of preprints and distributed them to the participants before the conference began. Additionally, the organizing committee appointed the opponents who analyzed the group of papers and inserted various of their own ideas into the discussion in order to lead it in the necessary direction.

The truth comes out in an argument. But other forms are also needed to reveal it. The game "Management of Programs" came to the aid here. In the PO PTZ it

was conducted by Candidate of Economic Sciences V. F. Komarov (Novosibirsk). As a result procedures and forms of management of programs were generated, which were then developed and implemented in the association.

Participants in the conference were divided into eight groups. Scientific workers and production workers got used to the work that was being conducted by consultants in the PO PTZ, and jointly developed an attitude toward the following problems: how many, how regularly and which target programs should be developed at enterprises, how and how frequently should they be monitored for their fulfillment and revised, is it necessary to have new forms of accounting and accountability, which forms of management correspond most to the target-program method, how can it best be coordinated with planning, which paths should be taken for incentives, and so forth.

After the intense discussions within the groups were completed, the group leaders generalized their results. And in order to reconcile and coordinate the intergroup and intragroup disagreements and to draw common conclusions, a jury of authorities was created. Its difficult task was to coordinate the mass of proposals.

#### Scientific and Technical Progress by the Year 2000

The conference program included a round-table discussion on the subject: the interaction between science and production in improving the management of enterprises. The main question was formulated thus: "What impedes and what can be done for radical acceleration of scientific and technical progress, for achieving leading scientific and technical positions in the world by the year 2000, and for fuller realization of the achievements of the scientific and technical revolution?"

When preparing statements on this subject it was recommended that the participants turn to the experience of concrete associations and enterprises and, using their examples, show how basically to raise their technical level, and, on the basis of the new generation of technical equipment, achieve high efficiency and production and produce products that meet the highest world standards. It was suggested that business managers declare what they expect from science and what should be undertaken in order to radically improve the embodiment of scientific achievements in practice. From scientific workers they wanted to hear an opinion on what the associations and enterprises need to do for a fuller appreciation of the achievements of scientific and technical progress. Special attention was devoted to the discussion of measures of the national economic, branch or plant level.

V. G. Grenbek, candidate of economic sciences (Novosibirsk), gave, for example, the following suggestions. At the level of the national economy--to select the key problems involved in reaching a high scientific and technical level by the year 2000 and to concentrate on technological systems, having provided for prognostication, planning, complete and reliable information and publicity. To reorient the economic mechanism for scientific and technical progress, to give the enterprises sufficient economic independence, to single out a state system for science and production, and to make all-union scientific production associations responsible for the scientific and

technical policy in their areas. At the branch level--to create target-program complexes. The new management code should reflect their interconnection with independent economic units. It would also envision competition among the latter.

V. P. Belyakov, corresponding member of the USSR Academy of Sciences, general director of the Kriogenmash Production Association (Balashikha) noted that production is waiting for science to produce primarily a modern system of economic planning and evaluation of the results of the scientific and production activity of the associations. Of the two tasks--satisfying the quantitative needs of the national economy for products and raising the scientific and technical level of these products--priority has been given to the former at the expense of the latter. Kriogenmash has also updated products disadvantageously, even though models of the world level have been created. The State Emblem of Quality is being assimilated only by products that are regularly produced in series, that is, those that are 3-4 years "old." And it is necessary to evaluate quality along with the technical level.

Academician A. G. Aganbegyan, the leader of the conference, summed up: In order to carry out the scientific and technical revolution, a new concept is needed: the development and introduction of total technological systems of a high level which encompass the entire process of production, on the basis of a new generation of technical equipment. Each branch should reveal and develop everything that can serve as a basis for a burst of progress, for reaching the world level. Then these achievements are extensively disseminated and the branches of the national economy are re-equipped, one after the other. If the rate of replacement of equipment can be increased from 3.5 percent to 8 percent per year and it takes 3-4 years to develop innovations, technical re-equipment will take approximately three five-year plans. Such are the prerequisites for solving this problem. In each branch the developer should be a comprehensive organization--a scientific production association along with a scientific research institution and a design bureau, a planning section, experimental and series plants, an installation administration, a repair base, a training center and so forth. The branch would assign a plant with a scientific research institute or design bureau to solve a unified problem--to begin the output of products of a high level, and an infrastructure for scientific and technical progress as created. Here it is important to be directed toward the final result as evaluated by the consumer. Changes are also necessary in the economic mechanism, the economic code, systems of education and incentives, and in the management structures. The target-program method should lie at the basis of these. Such is the outline. It should be developed in detail.

#### Plan or Program?

A doubt was expressed repeatedly at the conference: are comprehensive target programs necessary for an enterprise or is it not enough to have long-range and annual plans? Is this not a whim of fashion? No, answered the majority of participants in the conference. Enterprises are faced with principally new tasks, and the economic situation and conditions for management have changed radically. The possibilities of economic growth as a result of bringing in

new resources have decreased sharply, to one-third to one-fifth. Thus under the 11th Five-Year Plan 90 percent of the increase in production should be achieved as a result of increasing labor productivity, and the number of personnel at enterprises that are in operation will decrease, as a rule. The growth of capital investments in the national economy, according to the plan for the 11th Five-Year Plan will amount to 10 percent, while under the 9th and 10th Five-Year Plans it reached 43 and 32 percent, respectively. Hence the need for a considerable increase in the output-capital ratio and the effectiveness of capital investments. There are even more complicated tasks in reducing the material-intensiveness of products, since the growth rates of production in the extraction industry have dropped from 25 percent under the 9th Five-Year Plan and 10 percent under the 10th Five-Year Plan to 5 percent under the 11th.

The accounting for the aforementioned peculiarities is being traced at the level of the association, and it is being included by consultants in the development at the PO PTZ of such programs as "quality," "profitability," "auxiliary production" and "social."

Speaking of the conference, the general director of the PO PTZ, Yu. A. Luzyanin, discussed why the association invited economic consultants from the Siberian Branch of the USSR Academy of Sciences, which was brought about in connection with the target-program approach which they suggested. The tractor builders were bothered by such problems as the poor quality of tractors produced on the domestic market, the high cost, the irregularity of production, and the excessive turnover and replacement of personnel. In a large collective, naturally, there are a few specialists who know their business. On the whole they have mastered methods of planning, but this has not turned out to be sufficient for solving the aforementioned problems. The association needed a fresh view, a target-program approach to improving management.

Is it worthwhile to speak about things which are becoming increasingly well-known? The production workers answered: It is! They know little about the theory of the target-program approach, and even less about the practice. This is the opinion of the general director of the Kursk Production Leather Association, N. M. Pichugina: "The conference has not revealed and cannot reveal to us the theory and practice of the target-program method, but we have been imbued with its significance and have learned of ways to assimilate it."

The paper given by Candidate of Economic Sciences V. D. Rechin, "Comprehensive Program for Development of the Association: Methodology and Organization of Development," contributed to this.

Participants in the discussion about the relationship between the plan and the program had different opinions: on one flank were those who made no distinctions between the program and the plan, and on the other were those who sharply opposed them. Between the two extremes were several intermediate opinions.

Having studied the reports on the experience of the PO PTZ, the deputy director for quality of the Perm telephone plant, M. A. Belebez'yev stated

that the tractor builders could solve many problems by "ordinary methods," without resorting to drawing up programs. The target-program approach is necessary for extraordinary and complicated tasks, which may even go beyond the framework of the association. Using the example of his own plant, where they introduced the VAZ system, individual services are being created for adopting and carrying out strategic and current decisions, M. A. Belebez'yev gave one more justification for separating the plan and the program: current business--on the one hand, and long-term business--on the other.

The director of the crankshaft plant from Kherson, Ye. S. Banetskiy was in favor of the target-program approach to solving ordinary problems such, for example, as increasing the service life of products that are produced by the plant before the first capital repair or sharply increasing the volume of output of consumer goods.

Initially the conversation proceeded "in waves": proponents of the PTsP (target-program approach) exchanges places with proponents of "good plans." Then the game continued only with opposite goalposts. The chief of the division for procedures of the KamAZ Administration, V. Sh. Rapoport noted: "In our association the answers to many questions have to be obtained at the highest levels of management, which is clearly inefficient. It was necessary to change over to more extensive utilization of horizontal ties, and to do this, in particular, it was necessary to restructure the cost accounting (khozrazchet) so as to provide for the achievement of the final results. The method of the restructuring was target programs, for example, the program "Financial Resources." This would have been impossible without the PTsP. At the KamAZ the target-program method has become the customary one in management. It is even more crucial since frequently we lose sight of our goals and means become an end in themselves."

In the speech of the deputy general director for economics of the Kaluzhskiy Turbinnyy Zavod Production Association, P. S. Pranov, now a student at the Academy of the National Economy, he said: the PTsP is a new quality of the enterprise and collective. The speaker described, as it were, the "empirical" target-program method which they used when introducing brigade forms of organization and wages. The application of the PTsP made it possible for the head engineer of the Moscow helicopter plant, V. K. Kozyrev, to introduce twice as many qualitatively new items as usual. Certain successes of science in providing for the PTsP were announced by the deputy director of the Institute of Economics of the Ural Scientific Center of the USSR Academy of Sciences, G. F. Peshkov.

What tasks does the introduction of the target-program approach set for economic science? "It is necessary to have standard recommendations for PTsP," Ye. S. Banetskiy answers this question. "We must teach the practical workers to use the PTsP and adopt methods," V. Sh. Rapoport seconds his response. A request came into the Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences concerning the creation of methodological provisions for the enterprises for applying the target-program method on the basis of the experience of consultation of the PO PTZ. The chairman accepted this problem, but with the

stipulation that the experience in cooperation of the Pavlodar Tractor Builders along was not enough to draw up methods and that it was necessary to accumulate more experience. The institute, for example, before issuing methodological recommendations regarding optimal branch planning, used economic and mathematical methods to solve several dozen actual branch problems.

The fact that in practice they have adopted a number of recommendations of science which previously seemed abstract, particularly concerning the need for social programs, is shown by the discussion of the formulations of general goals for the socioeconomic development of the collective of PTZ. The first one to take the floor was P. V. Buderkin. The Omskshina Production Association, of which he is in charge, is older than the other tire enterprises of the country. Yet in terms of its indicators it is the best in the branch. For 2 decades there has not been a single week in which the plan was not fulfilled. In spite of this, the wages here are lower than in other associations. Such is the position of the branch. Almost all of the enterprises surrounding Omskshina are stronger and new personnel are more willing to go to them. But the tire workers do not complain and only ask for greater independence in implementing the plans for social development, and they have carried out extensive reconstruction through their own efforts (see EKO, No 1, 1984). An interesting example from the area of social development was given by P. V. Buderkin. The association purchased school uniforms and textbooks for children in families with no fathers. Before the beginning of the school year the gifts were distributed among the homes and presented with warm words and cards. The entire city learned about this and Omskshina deservedly reserved another high evaluation from the people.

At the conference they discussed forms of organization of the interconnections between science and production. One of them which is poorly developed but is attracting more and more attention is management consulting. The practice of consulting, although it is not large, exists. Judging from the questions in letters that come into the EKO editorial staff, the need for it is also growing. There are already certain recommendations which are based on a study of domestic and foreign experience. They were presented by Dr of Economic Sciences R. Kh. Yuksvyarov and Candidate of Economic Sciences Ya. A. Leymann (Tallinn)--who are enthusiastic about this matter. In the preprint which was presented by the director of the Aktyubrentgen Association, I. P. Shkurenko, recommendations were written to consultants, which show both experience and serious reflections. "The enterprise needs regular consultation assistance," such is the heading of the preprint. It seems that the discussion convinced the managers of the need to take advantage of consulting.

Ya. A. Leymann emphasized that organizational decisions were not enough for the development of consulting, particularly the creation of consulting firms, although one could not do without them. It is necessary to make extremely clear what is meant by this absolutely specific occupation. Not every scientist is suitable as a consultant. Not every consultant is a scientist. In order to expand the practice of business consulting it is necessary to have methods, the training of special personnel, and the creation of special consulting organizations.

Those in attendance, particularly the director of the Magnitogorsk calibration plant, L. G. Stobbe, were in favor of the expedience of creating consultation services and requested that the Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Science open a consultation point and expand work for filling the orders of associations and enterprises. Responding to this and other similar statements, A. G. Aganbegyan announced that the Presidium of the Siberian branch of the USSR Academy of Sciences had recognized the need to create a cost accounting subdivision for management consultation and it was now a matter of carrying out this decision.

It was the general opinion that the conference had been successful. A total of 58 people spoke, including 12 opponents and 28 in discussions. The participants found the atmosphere businesslike and they liked the free discussion and the availability of preprints. Participants in the conference became familiar with a special experience--the comprehensive program for the development of the largest machine-building association in Kazakhstan which was prepared during the course of management consulting.<sup>1</sup>

The recommendations of the conference emphasized the need for extensive application of the target-program approach for managing the activity of enterprises and associations. Organizational forms of conducting conferences were also touched upon. It was recognized as expedient to improve them in the future and to utilize new ones. If the meeting hall were an Olympic stadium, on the tableau would appear a hopeful line: "Until We Meet in Tallinn in 1985." Everyone unanimously agreed to conduct such conferences regularly--once every 2 years. The subject of the Tallinn meeting will be scientific and technical progress at enterprises. Its organizers are the Estonian SSR Academy of Sciences, the Academy of the National Economy and the Siberian Branch of the USSR Academy of Sciences.

#### FOOTNOTE

1. A special selection of materials will be devoted to this experiment in the next issue of the magazine.--Editor's remark.

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## READERS CONFERENCE HELD IN KAZAKHSTAN

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 10, Oct 84 pp 217-219

[Article by T. R. Boldyreva: "Readers' Conference in Kazakhstan"]

[Text] Representatives of industrial enterprises and VUZes of Petropavlovsk--the oblast center of North Kazakhstan Oblast--gather in the scientific and technical library in order to express their opinions about the magazine.

J. A. Pavlenko, the deputy director for economics of the Petropavlovsk Order of the Badge of Honor Plant imeni Kirov noted: "When a new issue of EKO comes out I immediately see it in all the subdivisions. I am helped a great deal by the materials in the column 'Techniques for Personal Work,' 'Advice to the Businessperson,' and 'Sociopsychological Practice Session.' But the journal, in my opinion, concentrates too much on the levels of the branches and associations. Many readers of the magazine are workers of the middle management level, and therefore I should like to see more material about daily work and production organization which is useful for this level of management. From this standpoint the EKO articles, for example, about brigades are fairly superficial and there are not enough concrete living situations or real conflicts and problems in them. And in practice we come up against them frequently.

"The column 'Experience of Leading Enterprises' is useful to production workers, but its appearance is too smooth. It is necessary to have an analysis of possible mistakes, 'stumbling blocks' which could be encountered during its introduction. We are interested not only in the experience of an individual enterprise--for good and bad can be found in each of them--but in an analysis of problems, a discussion how to solve one problem or another, say, in the branch or even on a broader scale."

G. I. Derevyanko, deputy chief of the division for automation and mechanization, drew attention to the final results of the introduction of new technical equipment. "They are now introducing costly technical equipment everywhere--robots, processing centers, machine tools with numerical program control. We do not keep track of expenses and assume that in the end they will produce a high final effect, and also a social effect. But it is necessary to compare expenditures with results. Perhaps during the first

couple of years after the introduction the losses are inevitable, for results cannot be achieved at once. But the plant workers have no point of reference. It is necessary to make calculations when introducing robot technology as well. So far certain robots are not reliable enough, they are not unified, they work poorly with other devices, no unified policy is envisioned, and their purpose is not clear. The problem of adjusting this technical equipment has not been solved either. Here there could be a plant service or agreements with scientific research institutes."

G. M. Zhildsov, the chief of the head metallurgists bureau of the Plant for Performance Mechanisms, having given a positive evaluation to the materials on the preparation and distribution of management personnel, expressed a desire to have the magazine publish articles devoted to this problem "from within," which would help to master the complicated science of management. VUZ graduates are not prepared for the role of managers, and they are deluged with a flood of unforeseen life situations with which they do not know how to deal!

V. I. Doroberti, the chief of the standarization division for the same plant: "I just happened to turn to EKO when I was interested in literature of social psychology. Since that time I have been reading it with a pencil in hand, making notes. I am especially interested in the columns entitled 'Check Yourself!', 'Sociopsychological Practice Session,' 'Advice to the Businessperson'--in a word, those columns which consider real life situations. I wish to draw attention to the problem of standards, which pervades all production. There are many standards, but because of departmental separation the branch standards are not coordinated with one another."

A. S. Ltyul'kin, head technologist of the Petropavlovsksel'stroy Trust said that the most attractive thing in the magazine was the broad approach to problems, the clear-cut presentation and the polemical style. "In the January 1983 issue they published materials entitled 'Round Table,' and 'At the Juncture of Industry and Construction,' in which they raised importance questions for the construction industry. I would like to see more of these significant articles regarding large national economic problems, for example, the practice of cost--accounting."

V. Ye. Golendukhin, deputy chairman of the oblast council for scientific organization of labor, suggested as a subject for extensive discussion the problem of interdepartmental cooperation. "Each enterprises 'turns its screw' independently and uses metal. It would be expedient to arrange cooperation or create small specialized enterprises which could supply all repair and industrial productions with the necessary unified parts. Now at every enterprise one can find costly equipment which is not sufficiently loaded, and could produce products for many others. G. Nikolayeva understood this issue 25 years ago in the novel 'Battle Along the Way.' But so far there is no cooperation at this level in the region."

The chief of the division for scientific organization of labor of the plant imeni Kirev, N. Sh Sharafutdinov, noted that the introduction of the experiment is the sum of accumulated mistakes. And when discussing advanced practice one should not forget about this.

At the conference they also discussed problems of organizations which engaged in the repair of electronic computer equipment and its effective utilization. In the opinion of those who spoke, the plant computer centers are not operating efficiently enough. EKO raised the subject in an article by U. M. Yu. M. Kanygin and N. A. Parfentseva, "How To Plan and Evaluate the Work of the Computer Centers" (No 3, 1893), but it must be considered more broadly--as a problem of final effectiveness.

The readers who spoke at the conference unanimously believed that the magazine should retain its genre and style of elucidating economic problems.--clear presentation, broad approach polemical style and humorous layout. The magazine's task is to each people to think economically, and this must be done clearly, figuratively in language.

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## WORKER INTERACTION SATIRIZED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in  
Russian No 10, Oct 84 pp 220-221

[Article by Eduard Dvorkin: "Why We Love Chess?"]

[Text] Greeted with applause from the first rows, the factory director appeared at the rostrum. He congratulated the collective on overfulfilling the plan, wished them further success and noted that the footwear produced by the factory was attractive, durable, comfortable and had long ago caught up then surpassed others.

Lunin-Kokorev wanted to stand up in this place and in front of everyone say that he, an engineer of this factory, was embarrassed even to walk by shoestores which were filled with their products, that it would be much better for everyone if the plan had not been filled for their footwear was unattractive, of poor quality, and it would better to pay three times as much and buy shoes from a speculator than to lay hands on these terrible offspring of their conveyor....

Having received a bonus, Lunin-Kokorev turned into the store, bought a little of this and that, and got in the line for sausages. When his turn came he wanted to demand the complaint book and write that they had shorted him 15 grams, that there was only one cash register for the entire store, that the window of the other one was covered with bills, that the cashier was doing he knew not what, that the salesman in the aisle could barely stand up, that the bread was like water;

Instead of this he tightened the knot in his tie as tight as he could.

Drunken fellows were talking loudly at the bar. Lunin-Kharkyov wanted to run up them, to shout, and if this did not help, take them by the scruff of the neck, bang their heads together and take them to the nearest police station....

Instead of this he put his shopping bag on a bench and tightened his shoestrings. Lunin-Kokolev's wife met him with complaints. He had come home late, he never thought about her, and probably, he was thinking about somebody else, he was making no money (...Lunin-Kokolev wanted to say that after work

there was a meeting and then there was a line in the store, and she could have gone to the store herself instead of sitting all day long in the beauty shop, that during 10 years of marriage he, fool that he is, had never once, although there had been opportunities, that he earns excellent money, and that he does not intend to stay....

Instead of this he tightened his belt down to the last hole.

Lunin-Kokolev did not appear in the chess club until 8:30. His partner had been waiting for him, calm and collected.

"Now I will show you!" Lunin-Kokolev thought, standing still in anticipation of a skirmish. He unbuttoned his jacket, took the crane and placed his 2 squares forward. His partner responded.

"No compromises," Lunin-Kokolev gave himself a command. "I am playing the queen's gambit."

After a couple of minutes his position became critical. His opponent was defending himself stubbornly, the situation was unclear. It was necessary to take radical measures.

"Sacrifice the knight!"--the daring idea came into Lunin-Kokolev's head. And, loosening the knot in his tie a great deal, Lunin-Kokolev moved the figure forward, knocking the table 3 times!

He left the club a happy man, his color had returned, and his eyes were sparkling with excitement.

"That Lunin-Kokolev is a fanatic!" the enthusiasts said to one another having observed the curse of the duel....

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